TRACER
User Manual

March 22, 2013 *Part No. 87616-11, Rev. 1.01*

Warnings, Cautions, and Notes as Used in This Publication

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a warning notice is used.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

Note

Notes merely call attention to information that is especially significant to understanding and operating the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, nor to provide for every possible contingency in connection with installation, operation, or maintenance.

Safety Reminders

- DO NOT operate this machine until you have read and understood this manual—if operating for the first time; ask your supervisor or a qualified operator for help.
- Plug power supply into a grounded receptacle ONLY! Do not cut off the ground prong or use any cord or adapter without a ground prong.
- Always assume that the power is ON—do not attempt any maintenance until you have verified it is OFF.
- Never turn the machine on while someone is performing maintenance or repair.
- Make sure your hair and clothing are kept clear of the machine while it is in operation.
- This product is not intended to be used in an explosive environment.

THINK SAFETY FIRST—ALWAYS PRACTICE SAFE WORK HABITS.

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Chapter 1 Before You Begin

The tracer is fully automatic in stylus positioning, tracing of both eyes, and calibration. It automatically calculates the Distance Between Lenses (DBL) and displays the shape and DBL on an integral screen.

The tracer is manufactured as a stand-alone unit for lab use or remote site tracing.

General Specifications

- Weight – 19 lbs.
- Power Supply – Input: 115v/60hz or 220v/50hz.
  Input: 100 – 240 VAC, 50/60hz.
- Size – Approximately 16 inches (41 centimeters) deep/10 inches (25 centimeters) wide/ 8 ½ inches (21 centimeters) high
- Stylus - auto stylus positioning. Auto positioning in bevel of frame, positioning along edge of pattern, positioning along bevel of lens.
- Job Storage – 120 jobs, which can include radius data and sagitta (frame wrap) for both right & left eye. Stored in flash memory, no batteries to replace.
- Tracing capabilities - frames, patterns, and lenses.
- Calibration – All calibrations performed and adjusted under program control. No mechanical adjustments required.
- Communications
  - Ethernet (Not all models)
  - OMA (Vision Council of America DCS)
  - Gerber-Coburn emulation
  - Binary & ASCCII
- Serial port parameters – 8 data bits, No parity, 1 stop bit, selectable baud rate: 9600-57,600
- Bar Code Scanner – optional
- Mounting – tabletop operation
- DBL – Automatic measurement when both eyes of a frame are traced. Single eye frame, pattern or lens tracing permits user entry of DBL.

- Precision - Based on encoder resolutions, radial measurements are precise to +/- 0.005mm and axis to +/- 1/80 grad.
- The tracer must be not used with the case removed.
- The tracer should not be dropped since it was not designed for rough handling.

Conforms to UL Std 61010-1 - PENDING

Conforms to EN 61010-1 (Model 52505 only) - PENDING

Chapter 2 Getting Started

This chapter covers setting up and preparing the tracer for operation. In addition to setting up the tracer for operation, an overview of the user interface will be covered in Section 2 of this chapter; pay particular attention to this section, as this information will greatly aid in using the rest of this manual.

Section 1: Setting Up the Tracer

After removing the tracer from the shipping box, the following steps will be performed:

1. Remove the shipping brackets.
2. Position the tracer for operation.
3. Connect the power supply to an electrical outlet and to the tracer.
4. Connect additional cables.

Tracer Shipping Bracket—Overview

To protect the tracer from damage, there is a shipping bracket and hardware that holds the carriage, stylus and other critical parts in place. If you need to ship the tracer (for example, to another location within your organization), reattach the shipping bracket and hardware—refer to the Appendices for reinstallation instructions.

Removing the Shipping Bracket

1. Find the 9/64-inch hex wrench in the tracer's accessory kit.

2. Pull the nose piece forward and spread the frame holder bars apart, as shown below:

3. Using the 9/64-inch hex wrench, remove the three screws in the shipping bracket by turning them counter-clockwise until the screws are loose.

4. Using the 5/32-inch hex wrench, remove the screw on the left side of the tracer by turning it counter-clockwise until loose.

5. Place the shipping bracket and hardware into the tracer's accessory kit for possible future use.

Note

NEVER ship a tracer without reinstalling the shipping bracket and hardware. Refer to Appendix B for instructions on preparing the tracer for shipping.

Positioning the Tracer

The tracer is designed so that it can be operated from a tabletop position.

Connecting the Tracer to an Electric Outlet

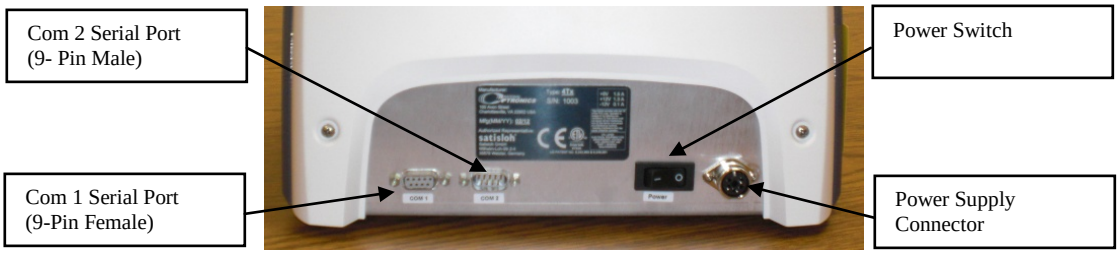
As with all electrical equipment, you must ensure proper power connection for proper functionality.

Connect the tracer to power following these steps:

1. Before connecting power, make sure that the tracer's ON/OFF switch is "OFF".
2. Plug the round connector from the external power supply unit into the back of the tracer. Then plug the 115V/220V AC male plug into the wall outlet, making sure that the connections are secure.

Other Connections

The tracer's power supply connector, power switch, and data communication connectors are located on the back of the unit (as shown below). The data communication connectors allow the tracer to exchange data with host computers, a variety of optical devices such as edgers and blockers, or a barcode reader.



The preceding picture does not show the optional Ethernet communication, which uses an RJ-45 socket. If this option is included, then the three communication connections described above are not available.

Communication Connectors

COM1: Serial port for connecting hosts or devices.

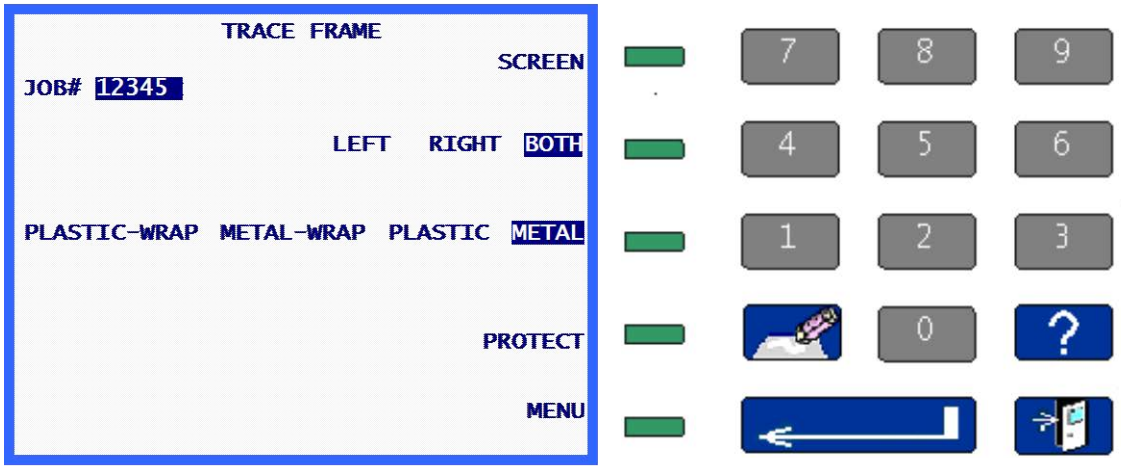
COM2: Serial port for connecting a barcode reader or devices.

Refer to Chapter 5, "Setup," for setting up specific communications.

Section 2: User Interface Overview

This section explains the basic operations that the user will perform during interaction with the user interface. These basic operations are repeated many times throughout the program and by becoming familiar with them now, the time required to become proficient in operating the tracer will be shortened.

The following display/keypad diagram will be referenced during the following definitions.



Key Pad

Numeric Keys

The numeric keys [0] through [9] are used to enter numeric values (see Numeric Entry with & without Decimal Place below) and to make menu selections (see Menu Selections below).

ENTER

The ENTER key is used to complete numeric entries.

EXIT

The EXIT key will exit the presently displayed screen and will cause the program to return to the previously displayed screen. When you are on the *Home Screen*, press the EXIT key to go to the *Menu Screen*.

CLEAR

The CLEAR key is used to exit error conditions and to delete incorrectly entered data (see Editing/Correcting Numeric Entries and Error Handling below.

HELP

The HELP key performs limited functionality in this version of the tracer program. It facilitates entry into a series of text help screens that provide useful information regarding the screen displayed when HELP is pressed. These screens may be menued in a manner similar to other system screens to provide more detailed information. The method of use will be the same as described elsewhere in this document.

SOFT KEYS

The small greenish colored keys along the right side of the display are called the Soft keys. These keys are responsible for providing the flexibility and simplicity of the user interface. The Soft keys change function dependent upon the screen being displayed. The function or action the key will perform will be shown on the display directly to the left of the Soft key and/or highlighted (see below). The Soft keys will be referenced from upper most key to lower most key as Soft key 1 through Soft key 5.

In the diagram on the previous page, Soft key 1 has the SCREEN function, Soft key 2 has the function LEFT RIGHT BOTH , Soft key 3 has the function PLASTIC METAL, Soft key 4 has the function PROTECT, and Soft key 5 has the function MENU

The specifics of each of these Soft key functions will be described fully throughout the rest of this manual.

Display

Information will be displayed as normal (dark blue text on a light colored background) or highlighted (light colored text on a dark blue background). In the above diagram 12345_, BOTH, and METAL are highlighted, all other displayed text is normal.

A highlighted item indicates a user response is required or shows the status of a selection that can be changed by the user. The possible types of highlighted items are, an entry field requiring user input (see Numeric Entry below), a selection that has been made from a list (see List Selection below), or a selection that's been activated (see Toggle Selection below).

Normally displayed text is either simply informational text or an action that a Soft key will perform (see Soft keys below).

Types of Responses

The following are the types of responses that the user will be required to make during program operation.

Numeric Entry without Decimal Place

If a numeric entry is required that does not include a decimal place a highlighted entry field with length equal to the maximum length of input will be displayed _ . The entry field will contain a flashing cursor

Enter the desired numeric entry then press ENTER to complete the entry. After pressing ENTER, the flashing cursor will disappear. In most cases the entered value will no longer be highlighted. In some cases the entry will remain highlighted, this indicates that the entry can be edited by pressing CLEAR; at which time the entry will be cleared, the flashing cursor will return and a new entry can thus be made.

Numeric Entry with Decimal Place

If a numeric entry is required that includes a decimal place a highlighted entry field with a pre-positioned decimal place and all other positions set to zero will be displayed 00.0, in this case the entry field will not contain a flashing cursor.

Enter the desired numeric entry by entering the most significant digit followed by all proceeding digits even if proceeding digits may be zero, then press ENTER to complete the entry. After pressing ENTER, the entered value will no longer be highlighted. For example to enter a DBL of 14.5 enter [1], [4], [5], ENTER; to enter a DBL of 14.0 enter [1], [4], [0], ENTER.

List Selections

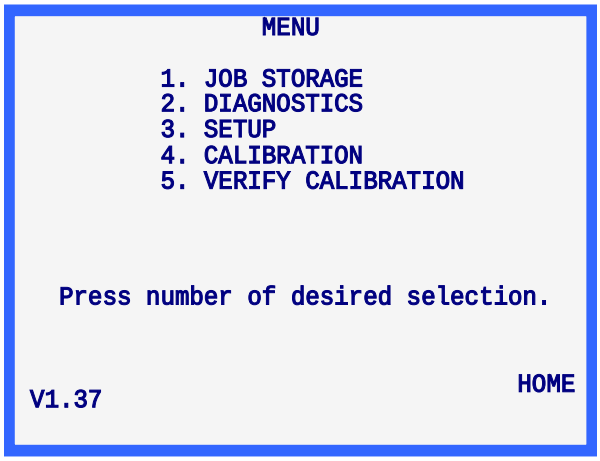
A List Selection is a list of items positioned next to a Soft key, with the item next to the Soft key highlighted. In the above diagram Soft Keys 2 and 3 have List Selections. The highlighted item is the selected item and as the Soft key next to this highlighted item is pressed, the items in the list will shift to the right, thus moving each item in turn into the highlighted field next to the Soft key.

Toggle Selections

A Toggle Selection is an item positioned next to a Soft key that can be enabled (turned on) or disabled (turned off) by pressing the Soft key that it is positioned next to it. When the item is disabled it will be normally displayed and when it is enabled it will be highlighted. In the above diagram PROTECT is a Toggle Selection and is disabled, if the Soft key next to it is pressed it will be enabled and will display as PROTECT.

Menu Selections

A Menu Selection is a list of numbered items. The desired selection is made by pressing the number that corresponds to the selection. The following is a display sample of a Menu Selection; to select Diagnostics, press the [2] key.



Editing/Correcting Numeric Entries

If an incorrect value is entered during entry of a numeric value and the ENTER key has not been pressed yet, the CLEAR key can be pressed to clear the entry and then enter the correct value.

If a displayed value needs to be altered, press the CLEAR key to clear the present entry and then enter the correct value. The exact steps may vary depending on which screen you are in.

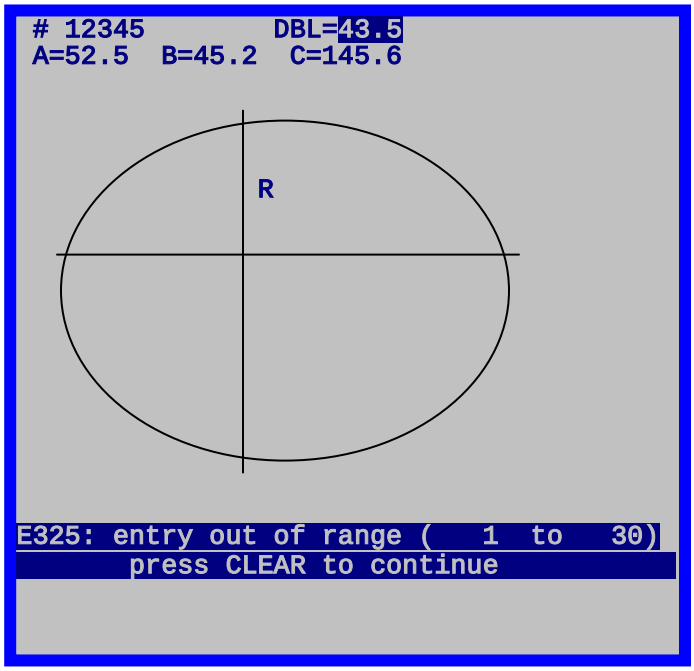
When the CLEAR key is pressed, if the entry field is for a numeric entry that does not include a decimal place, a highlighted entry field with length equal to the maximum length of input will be displayed and the highlighted entry field will contain a flashing cursor _. If the entry field is for a numeric entry that includes a decimal place, a highlighted entry field with a pre-positioned decimal place and all other positions set to zero will be displayed 00.0, in this case the highlighted entry field will not contain a flashing cursor.

Handling Errors

If an error is detected during operation of the tracer, a highlighted error message will be displayed along the lower lines of the display. The error message will indicate the cause of the error and provide sufficient information to eliminate the error. The CLEAR key is used to exit the error condition and is the only key accepted in response to an error. Upon pressing the CLEAR key the error message will be cleared from the display and the display will return to the state prior to the error occurring.

See Appendix A–Error Messages for a complete listing of all error messages.

The following is an example of an error; a DBL value has been entered that is out of range.



The Accessory Kit

Use the accessories provided to perform setup and other tasks. The illustrations shown below identify some of the accessories that are shipped with the tracer.

CALIBRATION PLATE ASSY, VER.2
P/N 02054166

LMB
(LENS MOUNTING BLOCK)
P/N 05055748

PATTERN LENS HOLDER ASSY, VER.2
P/N 02054167 w/ PATTERN RETAINER
(05055773)

PATTERN
CALIBRATION TEMPLATE
P/N 05055746

PATTERN AXIS
CALIBRATION TEMPLATE
P/N 05055745

LENS CALIBRATION
TEMPLATE P/N 05055750

Items not shown:

20053106 - Power Supply
20053114 - 1/2 Amp Fuse
20053115 - Slow Blow 2 Amp Fuse
20053113 – 3.15 Amp Fuse
1/64 “L-Shaped” Allen Key
9/64 “L-Shaped” Allen Key
5/32 “L-Shaped” Allen Key

Chapter 3 Powering Up

Once all of the procedures outlined in *Section 1: Setting Up the Tracer* (Chapter 2, "Getting Started") have been accomplished, the tracer is ready to be powered up.

Applying Power

Before applying power to the tracer, make sure the tracing stylus arm is fully retracted into the tracer. Under normal operating conditions, the stylus arm should be retracted, but it's always a good practice to verify that this is so.

The power can now be applied using the power switch located along the lower rear left hand side of the tracer.

Display Contrast Adjustment

The display contrast is preset from the factory, but if the contrast should not be acceptable for your lighting conditions the ARROW soft keys can be used to adjust contrast.

The contrast arrow keys will be displayed for three seconds upon power up. If neither ARROW soft key is pressed within this time, the program will assume no contrast adjustment is required and the program will proceed with the power up sequence. For each press of a contrast adjust key the time out will be extended another three seconds, thus allowing for another contrast adjustment key press if required.

Note

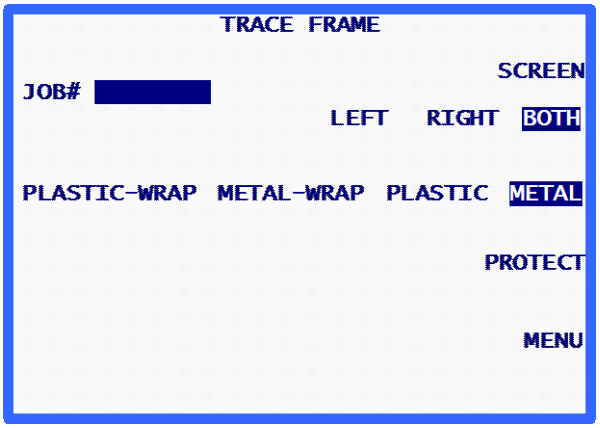
If the time out should occur before you get a chance to adjust the contrast, simply turn the tracer off and back on again; then make adjustments.

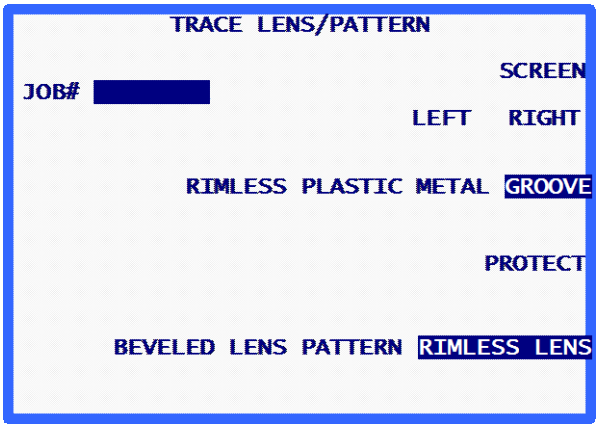
Note

If the display is viewable, but additional contrast adjustment is still desired, it is probably easier to use the contrast adjustment found in the Setup Menu; refer to Chapter 5, "Setup."

Home Screen

After the tracer has been powered up, the *TRACE FRAME Screen* or the *TRACE LENS/PATTERN Screen* will be displayed. Either of these screens is considered the *Home Screen*, that is, where you return after completion of tracing and menu operations. In the tracer's idle state, one of these should be the screen that is displayed. Note: The word *Protect* and the *Job#* field may not be displayed depending on configurations choices.





Note

If you mount the Pattern/Lens holder (or if you manually spread the clamp arms), the *TRACE LENS/PATTERN Screen* will display on the tracer's monitor. You can switch from the *TRACE FRAME Screen* to the *TRACE LENS/PATTERN Screen* by pressing the Screen soft key. If the tracer is configured not to prompt the user for a Job #, then START is the top soft key rather than SCREEN.

Setup

The tracer has a factory preset setup configuration. It is advised on first power-up to review this setup to verify correctness for your use of the tracer. See Chapter 5, "Setup" for access to setup options.

Calibration

The tracer has been factory calibrated, but it is a good practice to follow the calibration procedures on first power up of the unit. All calibrations are controlled and adjusted through the software; therefore, there are no mechanical adjustments required by the user. Refer to Chapter 6, "Calibration" for the steps in the calibration procedures.

Menu Screen

The *Menu Screen* provides access to all non-tracing functions of the tracer, such as:

1. Access to *Job Storage Menu* for both viewing, editing, and deleting stored jobs.
2. Access to *Diagnostics Screen*.
3. Access to *Setup Menu* for viewing and editing the setup.
4. Access to *Calibration Menu.*
5. Access to the *Calibration Verification Screen.*

Note

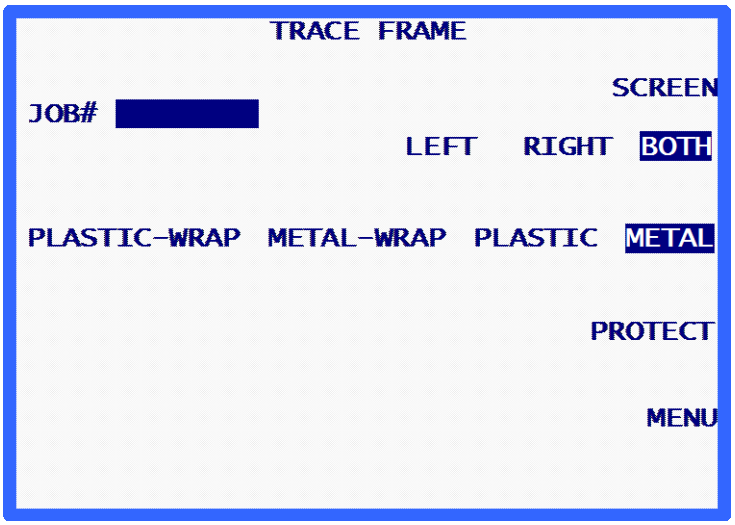
Access the *Menu Screen* from the *TRACE FRAME Screen* (Home Screen), by pressing the Menu soft key or the Exit key. From the *Trace Lens/Pattern Screen*, press the Exit key to access the *Menu Screen*.

Chapter 4 Tracing Operations

Since the main function of the tracer is to provide a method to trace frames, patterns, and lenses, this chapter of the manual will probably provide the majority of the information required to operate the tracer.

Section 1: Frame Tracing

After the tracer has been powered up and the automatic initialization sequence has been completed (if required), the *TRACE FRAME Screen* will be displayed. The *TRACE FRAME Screen* is also the screen that is returned to after completion of tracing and menu operations. In the tracer's idle state, this should be the screen that is displayed.



Frame Mounting

The following steps should be followed to properly mount the frame to be traced.

1. The frame is mounted in the frame clamps by holding the frame with temples pointed away from the tracer.
2. Place the nasal portion of the frame behind the nose piece of the tracer.
3. With the frame placed behind the nose piece, move the frame downward inserting the lower edge of the frame into the v-notches on the lower frame clamp arm.
4. Continue to push the lower frame clamp arm downward (using your fingers, rather than frame, as a light frame may distort) until the clamps are opened far enough to insert the upper edge of the frame into the v-notches on the upper frame clamp arm.
5. Release downward pressure on the lower frame clamp arm, thus allowing the upper and the lower frame clamp arms to close on the frame.
6. Before proceeding, make sure the upper and the lower frame clamp arms have securely closed on the frame and that the nose piece is properly centered in the nasal portion of the frame.

Starting Trace

Job Number

(This field does not appear if you have the “Permit Entry of Job Number” field on the *Operator Prompts Screen* set to NO.) From the keypad enter a Job Number, consisting of up to 12 digits followed by the ENTER key or, if the optional Barcode Scanner is used, scan the Job Number.

Once the Job Number is entered the START soft key will be displayed. No other entries are required if the default settings for the other selections are desired.

Note

The keypad and Barcode Scanner can be used inter-changeably to enter a job number. Thus, if the barcode cannot be read or the Scanner fails, simply key in the job number from the keypad.

Note

In some labs, the job number is assigned at the host or edger. The tracer may be configured so that the job number field is “pre-loaded” with a job number of 1, but is not visible.

Eye Selection

The selection of which eye(s) to trace (BOTH, RIGHT, or LEFT) is made by pressing the soft key that has these selections next to it, until the desired selection is highlighted.

Note

In order to automatically determine a DBL for the traced frame, BOTH eyes must be traced. Therefore, always trace BOTH eyes if possible.

Note

If the tracer is set up to use ASCII or binary communications, and if you trace BOTH eyes, the tracer will send data for the eye with the larger circumference, oriented as the right eye.

Frame Type Selection

The Frame Type Selection (METAL, PLASTIC, METAL-WRAP, or PLASTIC-WRAP) is made by pressing the soft key that has these selections next to it, until the desired selection is highlighted.

Note

Frame type information is used by the tracer to automatically adjust stylus pressure, and is included in the data set that is stored or sent to an edger.

Protect Job

The Protect option protects this job from being overwritten by a future trace that uses the same job number or when you have exceeded the maximum job storage. Refer to Chapter 7 “Stored Jobs” and Chapter 5 “Setup”, for options controlling the desired overwrite of a protected job.

The job can be protected by pressing the PROTECT soft key. You cannot overwrite a Protected Job without the tracer prompting you first. When protection is selected, the PROTECT soft key prompt will be highlighted. The protection can be turned on and off with repeated presses of the PROTECT soft key. This selection will only have an effect if a communication method is chosen that provides for job storage at the tracer. See Chapter 5 “Setup” for communication setup options.

When a job is protected a “P” will be displayed before the “#” sign proceeding a job number. This will occur in all screens that display a traced shape. For example an unprotected job number will display as “# 112” and a protected job number will display as “P# 112”.

Start Trace

Press the START soft key or the ENTER key to start the trace. During tracing the display will show the job number and shape image as it is being traced.

Stop Trace

During the tracing operation, the trace can be stopped by pressing the STOP soft key.

The tracing will also automatically be stopped if a problem is detected during the trace; such as a stylus dropout or resistance to stylus movement.

Trace Messages

During a tracing operation, you may see messages from the tracer on the screen. These messages may or may not require you to take action of some type. The following are the messages and an explanation for each:

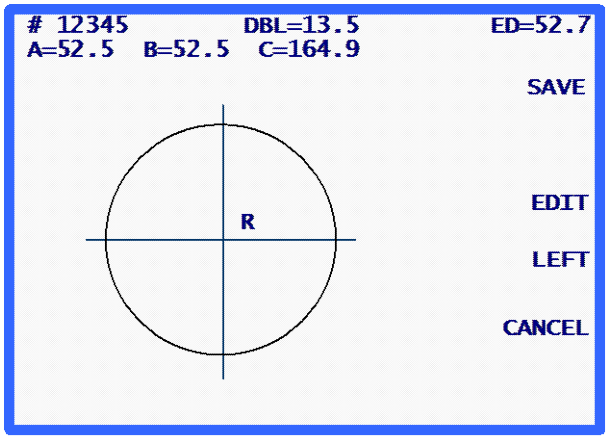
E610: Stylus dropout detected: This usually occurs when the bevel position is not correctly calibrated. The tracer will attempt to reposition the stylus in the correct location and retrace. If the tracer cannot correct the bevel placement problem, the trace is aborted. You will need to recalibrate.

Stylus Jump—Retracing: This usually occurs if the stylus failed to position itself in the groove but ran along the edge instead. (When such a situation occurs, the stylus may "jump" into the groove at some point giving an inaccurate trace.) The tracer will try to position the stylus in the groove and perform a retrace.

W630: Data bump at start of trace: This warning message comes up after unsuccessfully attempting a retrace from a stylus jump, which may be related to the situation described above where the stylus starts off on the edge of the frame rather than in the groove. This message is a warning; you may still use the trace if you wish. If you receive this message repeatedly and there is no noticeable bump or divot in the cut lens, then call the Technical Support staff to increase the tolerance for bumps.

Editing Trace

After the tracing is complete and the data has been processed, the results of the trace will be displayed.



The display will show Box dimensions (A and B), Circumference (C), DBL (if BOTH eyes are traced), the Effective Diameter (ED), and shape image. Press the soft key labeled LEFT or RIGHT to switch the eye displayed.

If BOTH eyes were not traced, the DBL entry will be highlighted and contain 00.0. The DBL is required to be entered before the job can be completed.

If the DBL was automatically calculated or once the DBL is entered, the SAVE or SEND soft key (depending on communication method selected) will be displayed.

Edit (DBL, C, A, or B)

To edit the displayed DBL, Circumference (C), width (A) or height (B), press the EDIT soft key repeatedly until the field you want to change is highlighted. To change that value, press the CLEAR key first. The field will show 00.0, which allows a new value to be entered. Type in the new entry, then press the ENTER key to complete the entry, and the field entry will no longer be highlighted.

During editing, the SAVE and EDIT soft keys will not be displayed. They will return once the edit is completed.

Note

The Edit A and Edit B function is intended for small changes, no more than 10% to 15%. Also, after you press ENTER to save the change, the tracer will perform some computations which might round up or down your manual entry.

Note

If BOTH eyes were traced, the Circumference, A size or B size may be edited separately on each eye.

Note

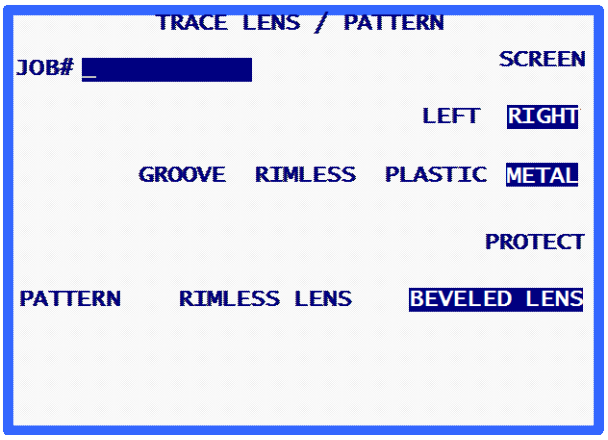
Some labs enter the DBL somewhere other than a tracer. If your lab works in this way, refer to “Operator Prompt” in Chapter 5 to bypass the DBL entry.

Saving or Sending a Trace

Press the SAVE or SEND soft key to complete the job. Depending on the communication method, the traced data will either be sent (SEND soft key) to the Lab's Host Computer or saved (SAVE soft key) to the tracer's storage. (To clarify further, the soft key will change from SAVE to SEND if the communications are set up with a Host Computer.) If you do want to completely discard the trace information, press the CANCEL soft key.

Section 2: Pattern or Lens Tracing

The tracer automatically detects that it is in the Pattern/Lens tracing mode whenever the Pattern/Lens Adapter is installed. When the Pattern/Lens mode is detected, the *Pattern/Lens Tracing Screen* will be displayed.



The Pattern and Lens tracing operations are very similar; therefore, both will be covered together in this section.

Note

All pattern and lens tracing operations will take place with the Pattern/Lens Adapter mounted on the right side of the nose piece on the tracer.

Pattern Mounting

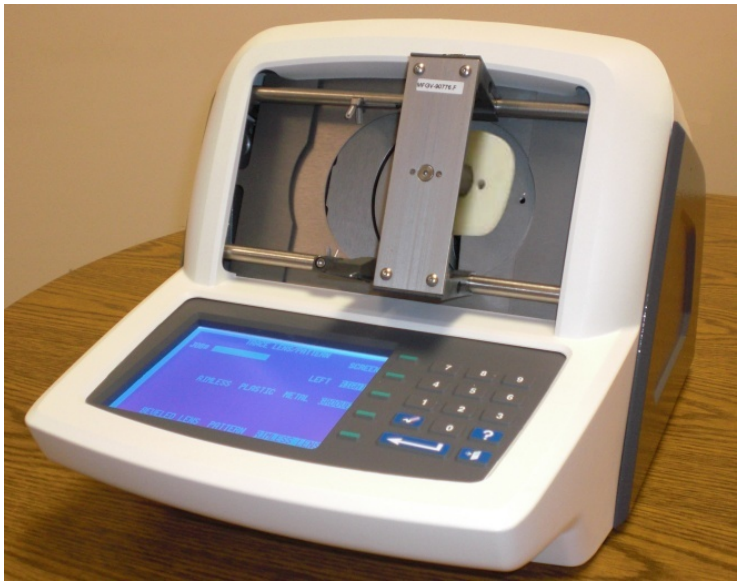
The Pattern/Lens Adapter is required to trace a pattern. The following steps should be followed to properly mount the pattern to be traced.

1. Remove the Pattern Retainer (magnet in post) from the Pattern/Lens Adapter. Place the pattern onto the Pattern/Lens Adapter with the alignment dowels fitting into the holes in the pattern.

Note

A right eye pattern should have the nasal pointed to the left of the tracer, and a left eye pattern should have the nasal pointed to the right of the tracer.

2. Re-attach the Pattern Retainer to hold the pattern securely to the Adapter.
3. Lower the nose-piece until it latches in the lower position so that it is out of the way for the Pattern/Lens Adapter to be installed.
4. Snap the lower fingers of Pattern/Lens Adapter over lower frame clamp arm, and around the right v-notch block.
5. Push lower frame clamp arm downward (using your fingers to assist movement) until clamps are opened far enough to snap the upper fingers of the Pattern/Lens Adapter onto the upper frame clamp arm, and around the right v-notch of the upper clamp arm.



Lens Mounting

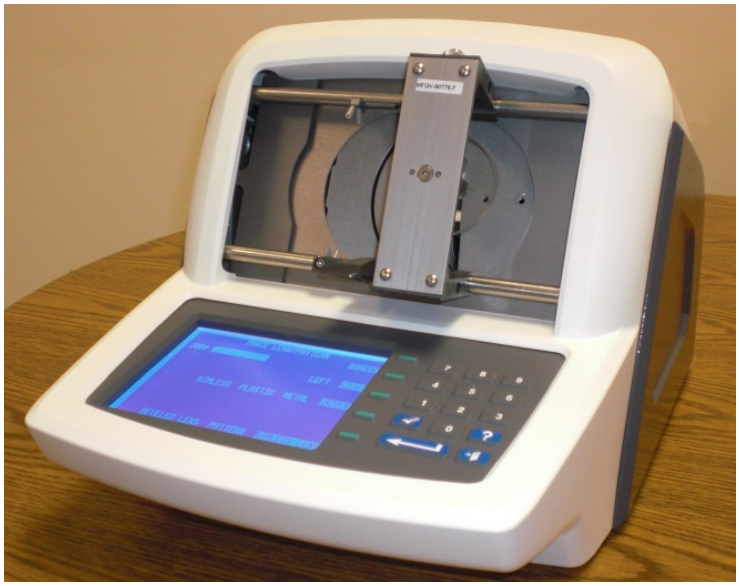
The Pattern/Lens Adapter is required to trace a lens. The following steps should be followed to properly mount the lens to be traced.

1. Remove the Pattern Retainer from the Pattern/Lens Adapter and install the magnetic Lens Mounting Block (LMB). Mount the lens to the Adapter using an adhesive blocking pad. The lens must be mounted on the back (concave) side, approximately on the geometric center and on the axis as accurately as possible. The Adapter has grooved lines corresponding to the A (horizontal) and B (vertical) axis to aid in proper axis mounting.

Note

A right eye lens should have the nasal pointed to the left of the tracer, and a left eye lens should have the nasal pointed to the right of the tracer.

2. Lower the nose-piece until it latches in the lower position so that it is out of the way for the Pattern/Lens Adapter to be installed.
3. Snap the lower fingers of Pattern/Lens Adapter over lower frame clamp arm, and around the right v-notch block.
4. Push lower frame clamp arm downward (using your fingers to assist movement) until clamps are opened far enough to snap the upper fingers of the Pattern/Lens Adapter onto the upper frame clamp arm, and around the right most v-notch of the upper gimbal.



Starting Trace

Job Number

From the keypad enter a Job Number, consisting of up to 12 digits, followed by the ENTER key or use the optional Barcode Scanner to scan the Job Number.

Once the Job Number is entered the START soft key will be displayed. No other entries are required if the default settings for the other selections are desired.

Note

The keypad and Barcode Scanner can be used inter-changeably to enter a job number. If the barcode cannot be read or the Scanner fails, simply key in the job number from the keypad.

Eye Selection

The Eye Selection (RIGHT or LEFT) is made by pressing the soft key that has these selections next to it, until the desired selection is highlighted.

Frame Type Selection

The Frame Type Selection (METAL, PLASTIC, RIMLESS, or GROOVE) is made by pressing the soft key that has these selections next to it, until the desired selection is highlighted.

Note

Frame type information is included in the data set that is stored or sent to an edger.

Protect Job

The job can be protected by pressing the PROTECT soft key. When protection is selected the PROTECT soft key prompt will be highlighted. The protection can be turned on and off with repeated presses of the PROTECT soft key. This selection will only have an effect if a communication method is chosen that provides for job storage at the tracer. See Chapter 5 “Setup” for communication setup options.

When a job is protected a “P” will be displayed before the “#” sign proceeding a job number. This will occur in all screens that display a traced shape. For example, an unprotected job number will display as “# 123” and a protected job number will display as “P# 123”.

The Protect option protects this job from being overwritten by a future trace that uses the same job number. Refer to Chapter 7 “Stored Jobs” and Chapter 5 “Setup”, for options controlling the desired overwrite of a protected job.

Pattern/Lens Selection

The Pattern/Lens Selection (BEVELED LENS, RIMLESS LENS, or PATTERN) is made by pressing the soft key that has these selections next to it, until the desired selection is highlighted.

Note

The Pattern/Lens selection determines the proper placement of the stylus arm when engaging the Pattern or Lens. If this selection is not correct, the trace may appear to complete normally, but the dimensions will be wrong.

Start Trace

Press the START soft key or ENTER to start the trace. During tracing the display will show the job number and shape image as it is being traced.

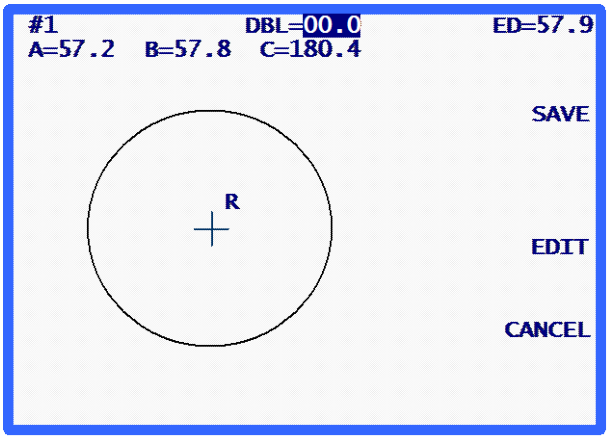
Stop Trace

During the tracing operation, you can stop the trace by pressing the STOP soft key.

The tracing will also automatically be stopped if a problem is detected during the trace; such as a stylus dropout or resistance to stylus movement.

Editing Trace

After the tracing is complete and the data has been processed the results of the trace will be displayed. The display will show Box dimensions (A and B), Circumference (C), Effective Diameter (ED), and shape image.



The DBL entry will be highlighted and contain 00.0. Enter the DBL (required before the job can be completed). Once you have entered the DBL, the SAVE or SEND soft key (depending on communication method selected) will be displayed.

Edit (DBL, C, A, or B)

To edit the displayed DBL, Circumference (C), width (A) or height (B), press the EDIT soft key repeatedly until the field you want to change is highlighted. To change that value, press the CLEAR key first. The field will show 00.0, which allows a new value to be entered. Type in the new entry, then press the ENTER key to complete the entry, and the field entry will no longer be highlighted.

During editing, the SAVE and EDIT soft keys will not be displayed. They will return once the edit is completed.

Note

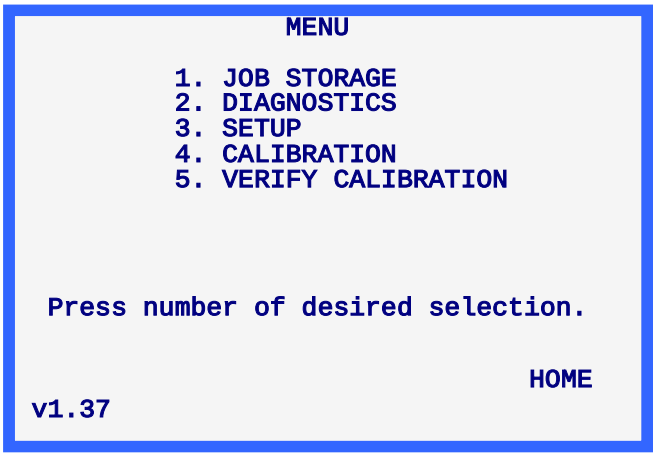
The Edit A and Edit B function is intended for small changes, no more than 10% to 15%. Also, after you press ENTER to save the change, the tracer will perform some computations which might round up or down your manual entry.

Saving or Sending a Trace

Press the SAVE or SEND soft key to complete the job. Depending on the communication method the traced data will either be sent (SEND soft key) to the Labs Host Computer or saved (SAVE soft key) to the tracer's storage. If the trace is to be discarded, press the CANCEL soft key.

Chapter 5 Setup

To go to the *Setup Menu Screen*, go to the *Menu Screen* first and press 3 ("SETUP") on the keypad. (To access the *Menu Screen* from the *TRACE FRAME Screen*, press the MENU soft key or press the EXIT key from the *TRACE LENS/PATTERN Screen*.



Note

The code version number is displayed in the lower left of the *Menu Screen*. The number displayed above may not be identical to your version.

Setup Menu

After you select "3.SETUP" from the *Menu Screen*, you will see the *Setup Menu*. This menu not only provides the ability to edit the setup values, but also provides a quick method to review the present setup values.

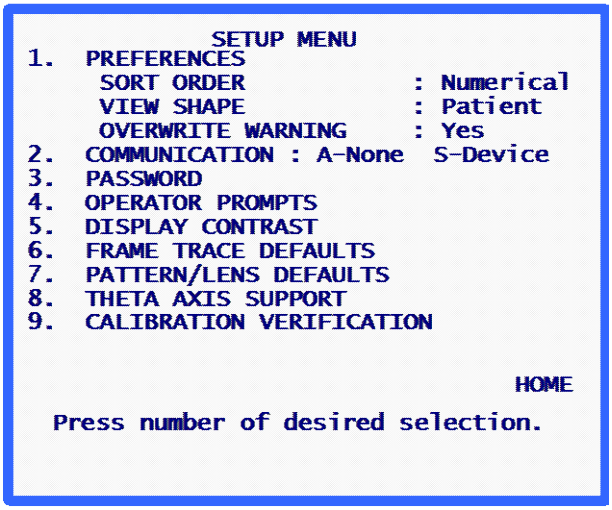
If you want to exit this screen without making changes, press the HOME soft key to return to the *Home Screen* or press the EXIT key to return to the *Menu Screen*.

Note

Upon first time power up of the tracer, the displayed setup values may vary from those displayed in the following figure as the factory defaults may have been preset for your particular application.

Also, please note that, if your security is set to MAX on the Setup *Password Screen* (see page 5-8), then you will be required to enter the password on the *Enter Password Screen* before you can access this screen.

The *Setup Menu Screen* looks like this:



Checking Setup Values

Pressing a key [1] to [9] will transfer to screens where setup items may be viewed or changed. For convenience some of the current setup values for PREFERENCES and COMMUNICATIONS are shown on the *Setup Menu* screen.

Saving Setup Values

If any setup value is changed, SAVE will be displayed next to soft key 1 on the Setup Menu screen. If you wish to save the setup changes you made press the SAVE soft key, which will save the changes and return you to the *Menu Screen*.

If changes have been made, but you do not wish to save them, press the EXIT key to return to the *Menu Screen*. A prompt will inform you that the changes have not been saved. Press the CLEAR key and then press either the HOME soft key or the EXIT key.

Changing Setup Values

In order to change a setup value press the numeric key corresponding to the menu selection desired. Upon pressing the appropriate menu selection key a setup screen specific to the chosen setup value will be displayed. Each of these setup screens is described below.

PREFERENCES

This takes you to the Preferences screen, which has the following fields:

Sort Order

This selection allows the sort order of the stored jobs to be selected. The program allows the stored jobs to be sorted in numerical (by job number) or chronological (oldest to newest) order. This sort order is used when viewing stored jobs from the *Job Storage Menu*.

The *Preferences* screen displays the possible sort order selections as a list selection next to soft key 1. Make the desired selection using the soft key.

View Shape

This selection allows the orientation of the displayed shape to be selected. The program allows the orientation to be patient or doctor view. In patient view the nasal of the right eye will be positioned to the left and the nasal of the left eye to the right. In the doctor view the right eye nasal is to the right and the left eye nasal to the left. The selected orientation will affect all displayed shapes, both those in the tracing screens and those viewed from the *Job Storage Menu*

Note

The patient view is probably more useful, as this displays the shape in the same orientation as the frame, pattern, or lens was positioned during tracing, allowing the traced item to be placed against the display for shape or size verification.

The *Preferences* screen displays the possible orientation selections as a list selection next to Soft Key 2. Make the desired selection using the soft key.

Overwrite Warn

This selection allows the overwrite warning for already existing job numbers in job storage to be enabled or disabled. **If the Overwrite Warning is enabled (YES selected), then the program will display a warning message if a job number is entered that already exists in the job storage. The user must then decide whether to overwrite the existing job or to choose a new job number**. If the overwrite warning is disabled (NO selected), then the program will automatically overwrite any existing job numbers, without any message to or responses required from the user.

When the tracer's job storage becomes full and you enter a new job number, the tracer will overwrite the oldest unprotected job in storage. This will be done either with or without a warning—depending on the Overwrite Warn setting (warning given if this field is enabled). If you elect not to overwrite the oldest job when prompted, you must manually delete one or more jobs before any new jobs can be stored in the tracer.

To enable or disable this option, press Soft Key 3 on the *Preferences Screen* (YES enables, NO disables).

Communications

This selection allows the setup values associated with the communication options to be selected.

Upon selecting the COMMUNICATION menu selection, the *Communication Setup Screen* will be displayed. This screen will display all the possible communication selections, some as list selections and others as numeric entry fields. Make the desired selections, then press the ENTER key and the program will return to the *Setup Menu* screen.

Communication Modes

Serial: Provides a data line that is slower than Arcnet, but may be less expensive. It also has the advantage of permitting communications using an industry standard protocol (OMA), which permits communications to various types of devices.

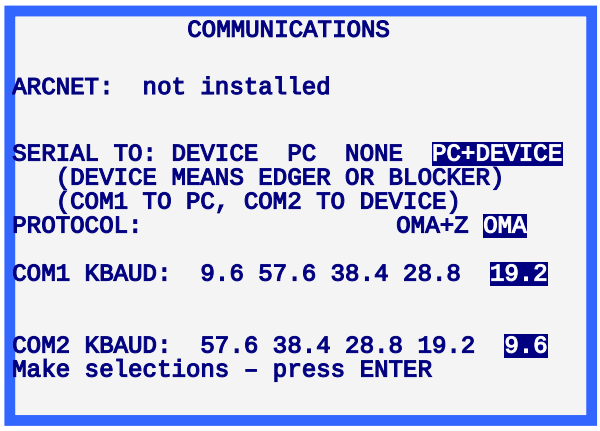
Ethernet: The Ethernet option does not appear explicitly on the COMMUNCATIONS SETUP screen. This option requires additional software at the host computer. Tracers equipped with Ethernet hardware do not have the ability to communicate using other modes of operation.

If you are using the Ethernet communications option, you will need to specify the following on the *Communications Screen*:

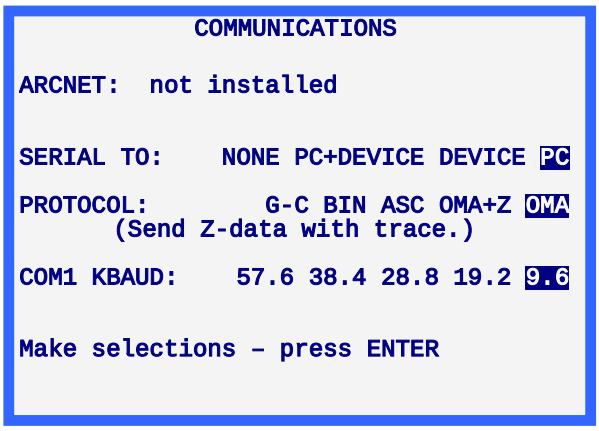
Arcnet:	None
Serial To:	Host
Protocol:	OMA (or OMA + Z)
COM1 KBAUD:	19.2

Serial Options and Protocols

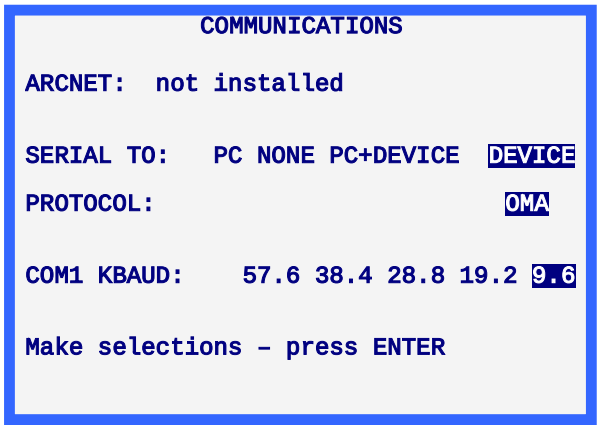
The COMMUNICATION screen changes depending on which serial connection and protocol options you select. The pictures shown below include settings you might use in your operation:



Both Host and Edger Selected



Host Selected



Edger Selected

Serial Communication to a Host

One of these protocols should be selected:

OMA: This industry standard permits communication to a variety of computers or devices.

OMA + Z: This industry standard supports 3-D data (Z data) and permits communication to a variety of computers or devices.

G-C (Gerber-Coburn): This is the Gerber-Coburn proprietary protocol, but it is supported by some third party host software products. (Time to transfer 1 eye data: 1 to 2 seconds) It does not support 3-D data.

BIN (binary): This is a proprietary communication protocol that is supported by some third party host software products—see NOTE below. (Time to transfer 1 eye data: 0.5 second)

ASCII: This is also a proprietary communication protocol that is supported by some third party host software products—see NOTE below. (Time to transfer 1 eye data: 1 second)

Note

When the serial protocol selected is either BIN or ASCII, you will be presented with two choices for the Trace Data Tag (Soft key 4). The two choices are:

- TRACE SOURCE—This causes the data to include an indicator whether the traced object was a pattern/lens or a frame.
- FRAME TYPE—This causes the data to include an indicator whether the traced frame was metal, plastic, or rimless.

Your choice for the Trace Data Tag will often depend on requirements imposed by the host software product you are using. Check with the provider of the host software to determine which (if any) of the two choices is required.

Serial Communication to Edger or Host + Edger

One of these two protocols should be selected:

OMA: This industry standard permits communication to a variety of devices. (Time to transfer 1 eye data: around 4 seconds at baud rate=9600)

OMA + Z: This industry standard supports 3-D data (Z data) and permits communication to a variety of devices. (Time to transfer 1 eye data: around 4 seconds at baud rate=9600)

Baud Rate

With OMA or OMA+Z protocol selected: You can select the speed of data transfer using the soft key corresponding to COM1 or COM2, depending on which serial port you are modifying. The speed set at the tracer must match the speed set at the attached device.

With either Gerber-Coburn (G-C), BIN or ASCII protocol selected: The baud rate is fixed at 9600.

Port Selection

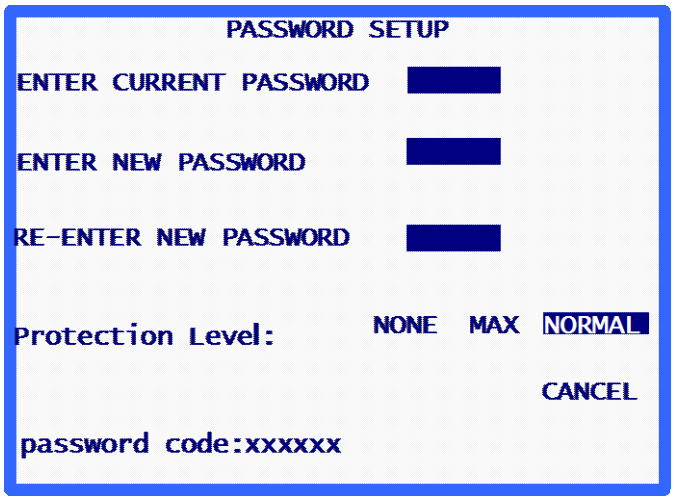
With the HOST connection selected: Use the COM1 serial port to attach the tracer to the host computer. A null modem is not usually required. COM2 may be used with a barcode reader.

With the EDGER connection selected: Use the COM1 serial port to attach the tracer to the host computer. If you are attaching to an edger, a null modem is not required. COM2 may be used with a barcode reader.

With both the HOST and EDGER connection selected: Use the COM1 serial port to attach to the host computer and the COM2 serial port to attach to the edger. The connection on COM1 generally does not require a null modem; however, when an edger is connected to COM2, a null modem is required. Other edgers may also need a null modem.
NOTE: Barcode input is not available when using this connection option.

Password

Use this screen to change the password or to change the level of security you want for using the tracer. The chosen password is used in editing or deleting stored jobs, and in accessing certain functions within the tracer operating system. The types of functions that require a password are determined through the level of security you establish.



Password Selection

The password can be one to six digits in length. Upon selecting the PASSWORD menu selection, the *Password Setup Screen* will be displayed. Follow the instructions provided on the screen to change the password. Upon completing re-entry of the new password, the program will return to the *Setup Menu*.

Use the CANCEL soft key or EXIT key to exit this screen without making changes to the password. Either key will return the program to the *Setup Menu*.

Protection Level

Use the fourth soft key (Protection Level) to set the password protection. The options are as follows:

None: A password is not required to access or modify any field, job, etc. within the tracer software.

Normal: A password is required to modify or delete stored jobs and to access Advanced Calibration settings.

Max: A password is required to modify or delete stored jobs, Advanced Calibration settings, and size of calibration objects. In addition, a password is required to access the Setup screen and its functions, the Diagnostics screen and its functions, the Calibration Offsets screen and its functions, and to skip Calibration Verification options.

Password Code (What Happens If I Forget My Password?)

If you forget the current password, call Technical Service and provide them with the "Password Code" displayed at the bottom of the screen (see screen sample above) to receive a special one-time use password. The Technical Service representative will provide you with a special password that can be used in place of the current password. This "Password Code" will also appear on the *Enter Password Screen* that appears when you try to access a password protected screen.

Note

This special password is valid for use one time only. A new special password will be required each time the password is forgotten.

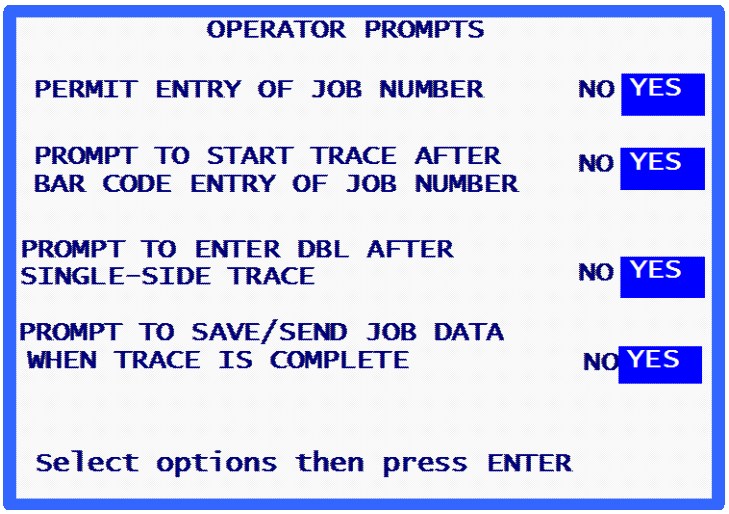
Warning

The special password is based on the password code and the password code changes each time the *Password Setup Screen* is displayed, so do not exit this screen before receiving and using the special password.

Operator Prompts

This selection allows you to control how much automation you want at certain parts of the process of tracing a frame and saving the information.

When you select OPERATOR PROMPTS from the *Setup Menu*, you will see a screen with the same fields as the one shown below:



PERMIT ENTRY OF JOB NUMBER: Change this to NO if you want the tracer to assign a default job number 1 to each job, for example, if actual job numbers are assigned at a host computer or edger in your lab environment. Also, if this is set to NO, the tracer will not display the Job# prompt on the *Trace Screen*.

PROMPT TO START TRACE AFTER BAR CODE ENTRY OF JOB NUMBER: Change this to NO if you want the trace to start automatically after you perform a bar code job number entry.

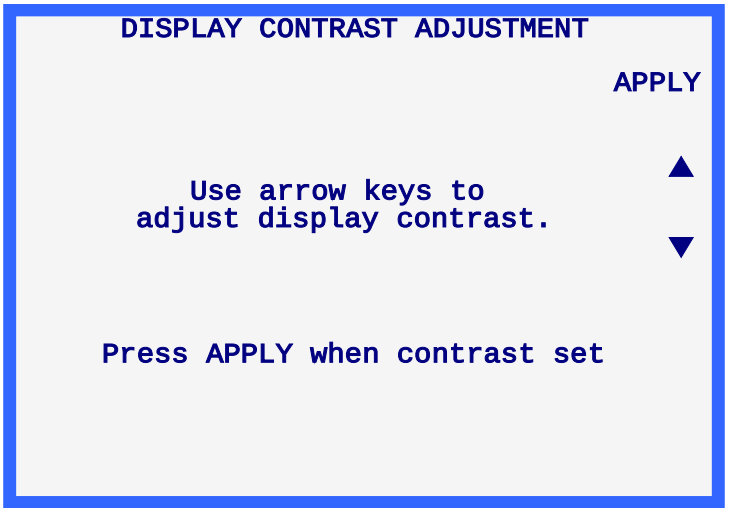
PROMPT TO ENTER DBL AFTER SINGLE-SIDE TRACE: Change this to NO if you do not want to be prompted for DBL (distance between lenses) after doing a single-side trace.

PROMPT TO SAVE/SEND JOB DATA WHEN TRACE IS COMPLETE: Change this to NO if you want to skip the prompt and either automatically save the job data or automatically send the job data to a host.

Display Contrast

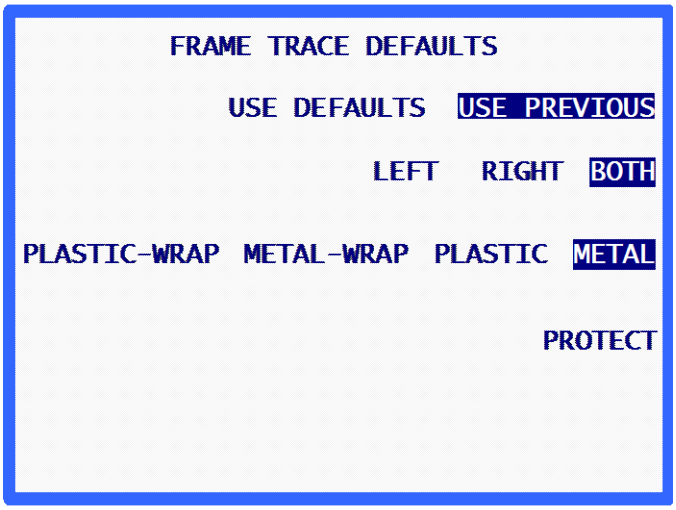
This selection allows the display contrast to be adjusted. The adjustment resolution provided is identical to that offered at power-up.

When you select DISPLAY CONTRAST from the *Setup Menu*, the *Display Contrast Setup Screen* will be displayed. Follow the instructions provided on the screen. Upon pressing the APPLY soft key, the program will return to the *Setup Menu*. Unlike the other setup values, any changes made to the contrast are automatically saved and it is not required to press the SAVE soft key in the *Setup Menu.*



Frame Trace Defaults

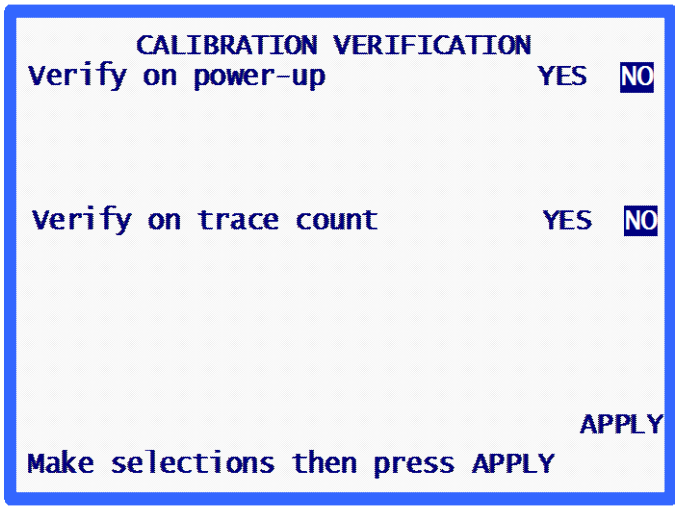
This selection shows a screen that allows the default settings for the *Frame Trace Screen* to be selected. Upon selecting the *FRAME TRACE DEFAULTS* menu selection, the *Frame Trace Defaults Screen* will be displayed, which looks the same as the *Frame Trace Screen* except for Soft Key 1. When you make a selection on this screen, it becomes a default setting that is automatically set whenever the *Frame Trace Screen* is displayed.



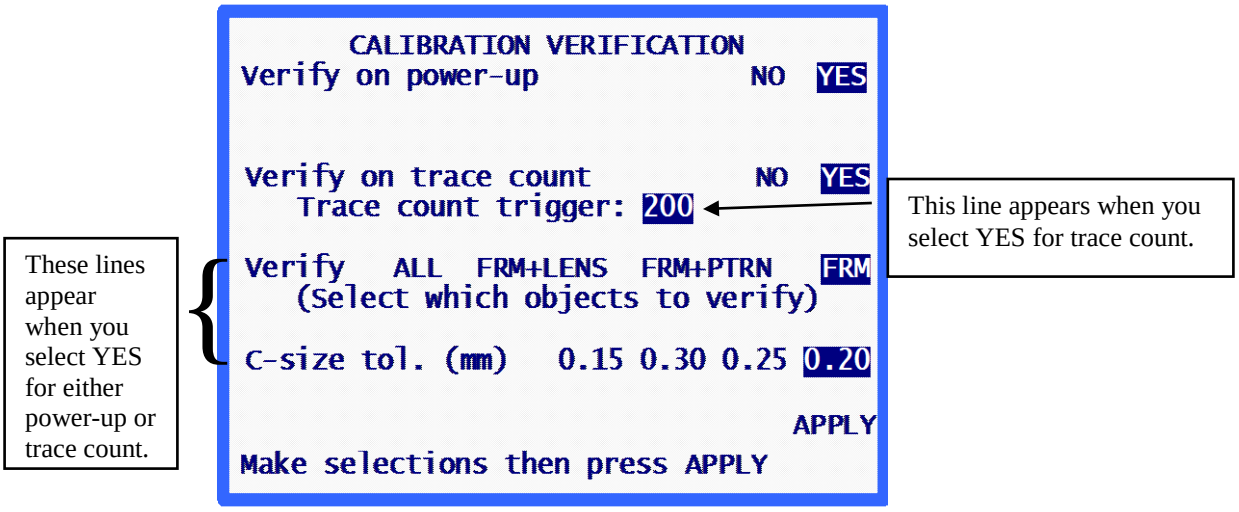
These defaults will be displayed on the *Frame Trace Screen* **if** you have the *USE DEFAULTS* field highlighted. If it is set to "USE PREVIOUS" (as shown in the sample screen presented above), the defaults will be selected upon initial bootup or at the first trace. After the first trace, the settings will be set to those used on the previous trace, and the defaults selected on this screen will be ignored.

Calibration Verification

When you set “Verify” to YES on either of the two prompts shown below, you will then be prompted to recalibrate the tracer on a regular basis, either at power-up or after a set number of traces. You can also specify which calibrations to perform (frames, patterns, lenses) and set tolerances.



After you select “YES” on either of the two verify options, other options appear as shown below:



Verify on Power-up

Set this to YES if you want the Calibration Verification process to occur each time you start up the tracer. After setting this to YES, you can specify which types of Calibration Verification to perform and the C-size tolerance limits to accept.

Verify on Trace Count

Set this to YES if you want the Calibration Verification process to occur after a user-specified number of traces. After setting this to YES, you can specify the number of traces needed to trigger the Calibration Verification. You can also specify which types of Calibration Verification to perform and the C-size tolerance limits to accept.

Selecting Types of Calibration Verification

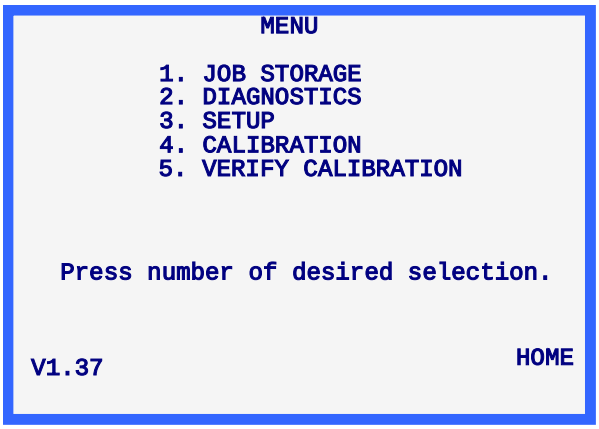
Calibration Verification always includes verification of frame calibration. The selections available to you allow for frame and lens, frame and pattern, or all three (frame, lens, and pattern).

Selecting C-Size Tolerance

This allows you to specify the allowable circumference error measured during the verification process. If the measured difference is greater than what is specified, a calibration sequence is initiated.

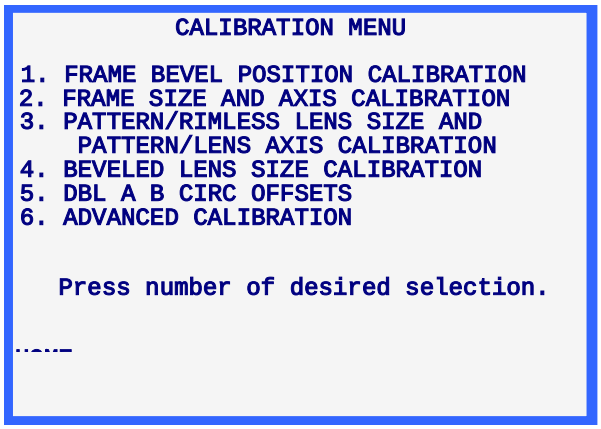
Chapter 6 Calibration

To access the *Calibration Menu*, select Menu Selection “4. CALIBRATION” by pressing the [4] key on the *Menu Screen*.



Calibration Menu

The *Calibration Menu* will now be displayed.



To exit the *Calibration Menu*, press the HOME soft key to return to the *Home Screen* or press the EXIT key to return to the *Menu Screen*.

Note

All calibrations and adjustments required by the tracer **are performed via program control. Under normal circumstances, there is no need for any mechanical adjustments.**

First Time Calibration

Even though the tracer has been factory calibrated, it is advisable to perform a complete calibration before using for the first time, as there is no way of controlling the unpredictable effects of shipping.

To calibrate the tracer, perform the following steps ***in this order***:

1. Select menu selection “1. FRAME BEVEL POSITION CALIBRATION” and perform this calibration.
2. Select menu selection “2. FRAME SIZE AND AXIS CALIBRATION” and perform this calibration.
3. Select menu selection “3. PATTERN SIZE AND PATTERN/LENS AXIS CALIBRATION” and perform this calibration.
4. Select menu selection “4. BEVELED LENS SIZE CALIBRATION” and perform this calibration.
5. Select menu selection “5. CIRCUMFERENCE OFFSETS” and perform this calibration, if needed

Calibration Procedures

The calibration procedures can be performed individually following these rules:

- The “Frame Bevel Calibration” can be performed individually without any effects on the other calibrations.
- The “Pattern Size and Pattern/Lens Axis Calibration” or “Beveled Lens Size Calibration” can be performed individually without any effects on the other calibrations.

Caution

The “Pattern Size and Pattern/Lens Axis Calibration” or “Beveled Lens Size Calibration” should be performed individually only if the frame sizing is correct. Otherwise, perform the “Frame Size and Axis Calibration” before performing the “Pattern Size and Pattern/Lens Axis Calibration” or “Beveled Lens Size Calibration.”

- The “Frame Size and Axis Calibration” should never be performed individually. Anytime this calibration is performed the “Pattern Size and Pattern/Lens Axis Calibration” and “Beveled Lens Size Calibration” must also be performed afterwards. Changes caused by the Frame Calibration will also affect the pattern and lens sizing.

If you desire to perform them all they should be done in menu order, see “First Time Calibration” above for instructions on performing a complete calibration.

Frame Bevel Calibration

This selection provides for the calibration procedure for placing the tracing stylus into position in the frame bevel. The instructions displayed on the screen will step you through the calibration procedure. The following is an overview of the steps.

1. Place a light-weight to medium-weight metal frame with average curvature and approximately 38 mm “B” size in the frame holder.
2. From the Calibration Screen, press “[1] FRAME BEVEL POSITION CALIBRATION.”
3. Pull the stylus tip out and position the tip into the frame bevel (right eye).
4. While holding the stylus securely in this position, so as to get a stable reading, press the APPLY soft key.
5. Release the stylus so that it retracts. The carriage mechanism will move to the left side of the frame.
6. As in Steps 3 through 5, pull out the stylus tip and position it securely, this time in the left eye frame bevel.
7. Press the Apply soft key; then release the stylus arm.
8. The calibration is complete and the program will return to the *Calibration Menu*.
9. Remove the frame.

Frame Size and Axis Calibration

This selection provides for the automatic calibration of the frame size and for either automatic or manual calibration of the frame axis. This calibration procedure requires use of the frame calibration plate. The frame calibration plate is a frame style template that contains a circular hole with a diameter of approximately 55 mm in the right eye position. The left eye position is a partial circular hole with a diameter of approximately 71 mm with a flattened bottom portion.

There are two available methods for calibrating the frame axis: AUTO and MANUAL. In AUTO mode, the tracer computes calibration values and stores them in its memory. In manual mode, the axis calibration values will not be stored, but can be keyed in manually using the “Advanced Calibration” screen. The tracer is shipped with the axis calibration method set to MANUAL.

The instructions displayed on the screen will step you through the calibration procedure. The following is an overview of the steps:

1. Mount the frame calibration plate as you would a frame, with the smaller circle positioned in the right eye position.

   Make sure that the alignment mark is aligned with the front vinyl-covered pin on the right frame holder insert. Assure that the plate is seated completely down into the "V" created by the vinyl-covered pins.

2. Enter the "Cal Values" as printed on the plate. After you have done this once, the tracer will remember these values. **Note,** if your plate does not have a dual set of numbers labeled at each eye position or does not specifically state "Cal Value," the single numbers labeled on the plate should be considered the Cal Values.

3. Enter the axis calibration method you want (AUTO or MANUAL)—unless you suspect the axis is not calibrated correctly, leave this field at the factory default (MANUAL). The MANUAL selection will bypass the axis calibration, leaving the axis values the same.

4. Press the START soft key to begin calibration tracing.

5. The right eye will be traced, and the "PROCESSING DATA" message will be displayed. The left eye will not be traced until the right eye data has been processed.

6. The left eye will now be traced and the "PROCESSING DATA" message will again be displayed.

7. Steps 4 and 5 may be repeated, depending on the version of your software.

8. The "CALIBRATION COMPLETE" message will be displayed and the program will return to the *Calibration Menu*.

9. Remove the calibration plate.

Pattern Size and Pattern/Lens Axis Calibration

This section provides for the axis calibration of the pattern and lens and size calibration for patterns and rimless. This calibration procedure requires the use of the pattern axis calibration template (P/N 05055746)—refer to page 2-9 for a picture.

The following is an overview of the steps:

1. Go to the Calibration screen.
2. From the Calibration menu, select "3. PATTERN SIZE AND PATTERN/LENS AXIS CALIBRATION."
3. Respond to the prompts:
   A. Mount the pattern axis calibration template in the right eye position using the Pattern/Lens Adapter. Mount the point of the pattern axis calibration template facing toward the ***right*** of the machine.
   B. Enter the template diameter as marked on the template. If no diameter is marked, enter 58.0.
4. Enter the axis calibration method you want (AUTO or MANUAL)—unless you suspect the axis is not calibrated correctly, leave this field at the factory default (MANUAL). The MANUAL selection will bypass the axis calibration, leaving the axis values the same.
5. Press the START soft key to begin calibration tracing.
6. The pattern will be traced and the "PROCESSING DATA" message will be displayed.
7. The "CALIBRATION COMPLETE" message will be displayed and the program will return to the *Calibration Menu*.
8. Remove the calibration template.

Beveled Lens Size Calibration

This section provides for the automatic calibration of the beveled lens size. This calibration procedure requires the use of the Lens calibration template. The Lens calibration template is a circular beveled lens with a diameter of 58 mm.

The instructions displayed on the screen will step you through the calibration procedure. The following is an overview of the steps:

1. Mount the Lens calibration template in the right eye tracing position, using the LMB and Lens/Pattern Adapter.
2. Enter the correct diameter 58mm. After this is done the first time, the tracer will remember this value.
3. Press the START soft key to begin calibration tracing.
4. The Lens will be traced and the "PROCESSING DATA" message will be displayed.

5. The “CALIBRATION COMPLETE” message will be displayed and the program will return to the *Calibration Menu*.
6. Remove the Lens calibration template.

DBL A B and Circumference Offsets

Use this calibration if you find that the DBL, A-Size, B-Size, or circumference is consistently off by a specific amount. You can add separate offsets for frames, patterns, and lenses. The need for these offsets more often occurs in remote site tracing operations.

The instructions displayed on the screen will step you through the Circumference Offset procedure. The following is an overview of the steps:

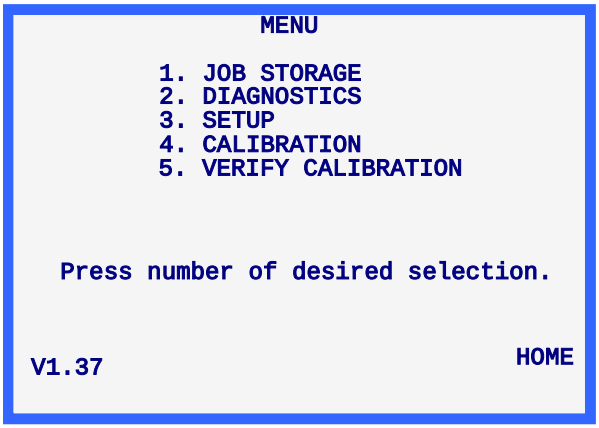
1. Go to the Calibration screen.
2. From the Calibration menu , select “5. DBL A B Circ Offsets”.
3. There are fields on this screen for *Frame, Pattern/Rimless Lens*, and *Beveled Lens*. Type the offset needed (in mm) into the appropriate field. Your limits are +/— 5 mm.

Advanced Calibration

This selection provides access to the automatically produced calibration values. Access to this menu selection is only required under unusual circumstances and is thus designed for use by Technical Service personnel or for use under the supervision of these personnel.

Calibration Verification

To access the *Calibration Menu*, select Menu Selection "5. VERIFY CALIBRATION" by pressing the [5] key on the *Menu Screen*.



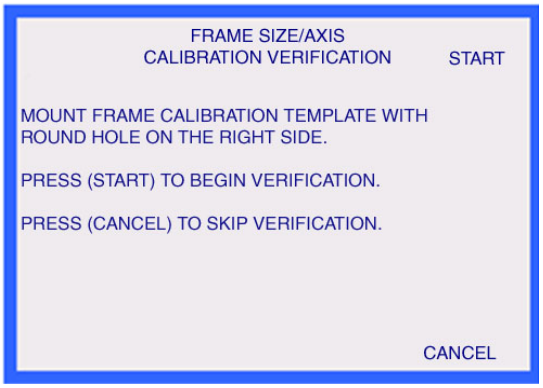
The Calibration Verification process checks the calibration of the tracer; that is, whether or not the traces meet the user-specified tolerances. You can set up Calibration Verification to initiate each time you power up the tracer or after a set number of traces—refer to the end of Chapter 5 "Setup" for instructions on setting up Calibration Verification to initiate automatically. You can also begin the Calibration Verification process manually (option 5 from the *Menu Screen*).

Note

Unlike the other aspects of Calibration discussed in this chapter, you do not access Calibration Verification from the *CALIBRATION Screen*. Instead, you will either press 5 on the keypad from the *Menu Screen* discussed at the top of this page, or it will start up automatically as discussed in Chapter 5, "Setup."

How to Use Calibration Verification

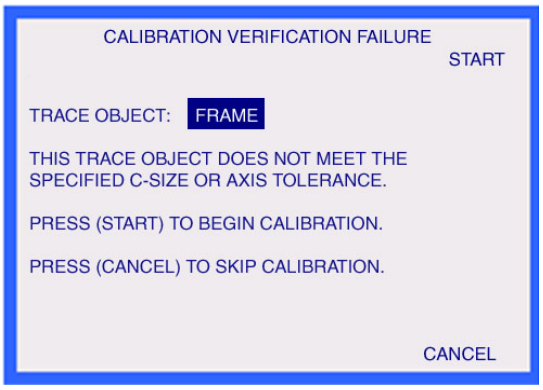
After entering Calibration Verification as discussed above, you will see the following screen:



1. Mount the Frame Calibration Plate.

2. Press the top soft key (START) to begin the Frame verification. If the calibration is verified, then you will either go to the *Menu Screen or* go to the next type of verification set for your tracer—refer to the end of Chapter 5 “Setup” for types of calibration you can select.

   If the verification fails, you will see the following screen:



3. Upon seeing the *Calibration Verification Failure Screen*, press the top soft key (START) to perform an automated calibration. Once it finishes, you will either go to the *Menu Screen or* go to the next type of verification set for your tracer.

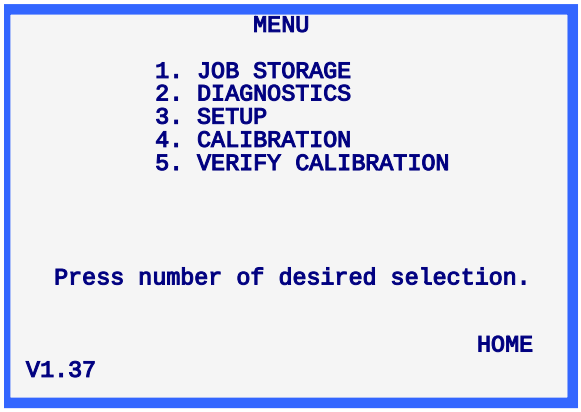
Note

To skip the calibration at this point, press the Cancel soft key—canceling may require a password, depending on the security level established for your tracer.

Calibration Verification always includes verification of frame calibration. The selections available within Setup allow for frame and lens, frame and pattern, or all three (frame, lens, and pattern). The steps and screens in verifying calibration for pattern/rimless lenses or beveled or beveled lenses are similar to those used in verifying frame calibration as described above.

Chapter 7 Job Storage

To access the *Job Storage Menu Screen*, press the Menu or the Exit key on the keypad. Then select Menu Selection “1. JOB STORAGE” by pressing the [1] key.

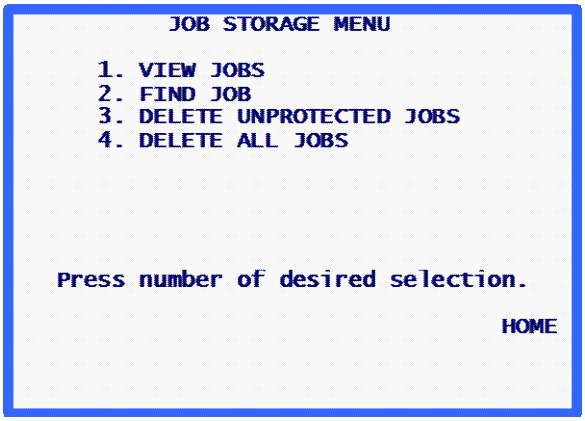


Note

The code version number is displayed in the lower left of the *Menu Screen*. The number displayed above may not be identical to your version.

Job Storage Menu

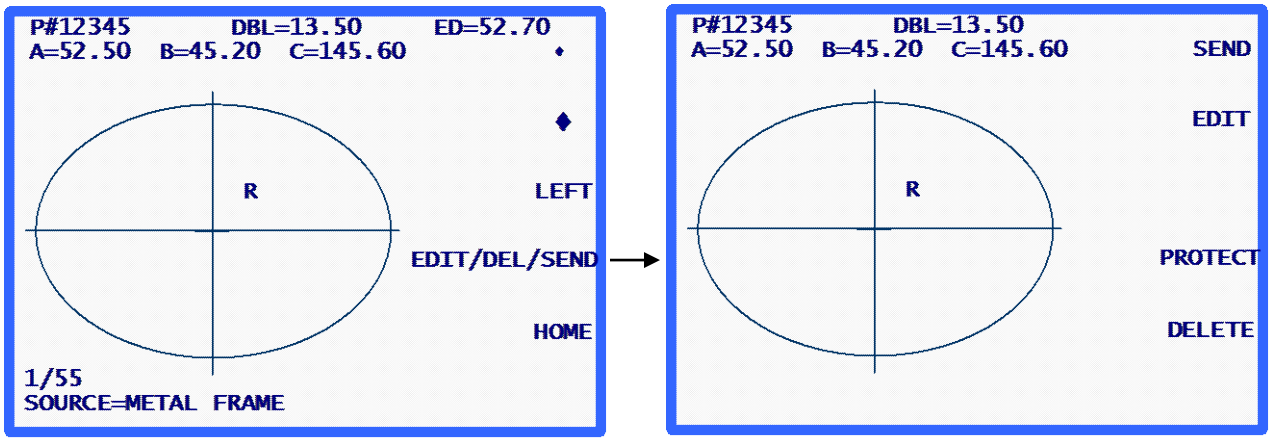
The *Job Storage Menu* will now be displayed. This menu provides complete access to all functions relating to the stored jobs. The tracer can store 120 jobs, consisting of both right and left eye data.



To exit the *Job Storage Menu*, press the HOME soft key to return to the *Home Screen* or press the EXIT key on the keypad to return to the *Menu Screen*.

View Jobs

The “View Jobs” menu selection will display stored job in order. The order will depend on the sort order (numerical or chronological) that was chosen in setup.



View Jobs Screen Edit Jobs Screen

Information about the *View Jobs Screen*:

- The job number for this stored job is indicated by “# 12345”.
- The “P” proceeding the job number “# 12345” indicates that this job is protected. If this job were not protected, there would be no “P” displayed.
- The eye that this data pertains to is indicated by an “R” (right eye) or “L” (left eye) positioned near the center of the traced shape.
- If both eyes are available for this job, a soft key labeled LEFT or RIGHT will be available to switch the displayed eye. The right eye data will always be displayed first when both eyes are available.

  The left eye data can be viewed by pressing the LEFT soft key, at which time the left eye data will be displayed and a RIGHT soft key will be displayed. The right eye data can be returned to by pressing the RIGHT soft key.
- The DBL for the job is displayed. You can change the DBL by pressing the EDIT/DEL/SEND soft key (see “Editing Jobs” on the next page).
- The Box dimensions (A and B), Circumference (C), and Effective Diameter (ED) for the displayed eye are shown. You can change the Box dimensions and the Circumference by pressing the EDIT/DEL/SEND soft key (see the “Editing Jobs” section on the next page).
- In the lower left corner of the display, an indicator shows which job we’re viewing and how many jobs are stored. In the example screen, the first job of 55 total jobs is being viewed.
- Also displayed in the lower left corner, you can view information about the type of trace originally done on this job (in the example, a metal frame was traced).
- The ARROW soft keys will move forward or backward through the stored jobs. The present position in the list of stored jobs can always be determined by checking the job indicator in the lower left corner of the display.

- If you want to delete the viewed job, press the EDIT/DEL/SEND soft key (see the "Editing Jobs" section below).
- To send a stored job to an attached Host Computer, press the EDIT/DEL/SEND soft key (see the "Sending Stored Jobs" section below).

Editing Jobs

When you press the EDIT/DEL/SEND soft key from the *View Jobs Screen*, you will enter the *Stored Jobs Edit Screen*—see sample screen on opposing page. This screen may require a password.

If you change information on this screen, the SAVE soft key will be displayed. To save the changes, press the SAVE soft key. If you do not wish to save the changes or no changes have been made, exit the *Stored Jobs Edit Screen* by pressing the EXIT key. Upon exit the program will return to the *View Jobs Screen*. (Refer to the "Edit" section on the next page for specific instructions on editing jobs.)

Edit (DBL, C, A, or B)

To edit the displayed DBL, Circumference (C), width (A) or height (B), press the EDIT soft key repeatedly until the field you want to change is highlighted. To change that value, press the CLEAR key first. The field will show 00.0, which allows a new value to be entered. Type in the new entry, then press the ENTER key to complete the entry, and the field entry will no longer be highlighted.

During editing, the SAVE and EDIT soft keys will not be displayed. They will return once the edit is completed.

Note

The Edit A and Edit B function is intended for small changes, no more than 10% to 15%. Also, after you press ENTER to save the change, the tracer will perform some computations which might round up or down your manual entry.

Send

If the tracer is configured so that its serial connection is either "PC" or "DEVICE + PC," when you enter the *Stored Jobs Edit Screen*, you can send the displayed job to the Host Computer by pressing the SEND soft key. If you edited any of the information on the screen (such as changing the circumference or DBL), the SEND soft key will change to "SAVE." In that situation, you must press the SAVE soft key and then re-enter the *Stored Jobs Edit Screen* (by pressing the EDIT/DEL/SEND soft key to SEND the job to the Host Computer.

Protect

If the viewed job is protected a “P” will be displayed before the “#” sign proceeding the job number and the PROTECT soft key prompt will be highlighted. The job can be protected or un-protected by pressing the PROTECT soft key.

The Protect option protects this job from being overwritten by a future trace that uses the same job number (even if the Overwrite Warn feature is disabled).

Delete

Press the DELETE soft key to delete the viewed job. A verification screen will be displayed that requires the user to verify this is the action they desire.

If the job is protected an error message will be displayed. The job can not be deleted while it is protected. If it is desired to delete a protected job, un-protect the job using the PROTECT soft key (see above).

Caution

There is NO UNDELETE FEATURE.
Once the jobs are deleted, they are gone from the system permanently.

Find Jobs

To go directly to a specific job or to check if a specific job exists, select menu selection “2. Find Job” selection from the *Job Storage Menu*.

The desired job number will be requested, enter the desired job number and follow the instructions on the screen. If the desired job is found, the “View Jobs” screen shown above will be displayed, showing the data for the selected job. If the job is not found, an error message will be displayed indicating that the job was not found.

Delete Unprotected Jobs

The “Delete Unprotected Jobs” selection as the name implies will delete all unprotected jobs.

This menu selection may be password protected. Once the password is correctly entered, a screen indicating how many jobs will be deleted is displayed and a verification to proceed with this action is required.

Caution

There is NO UNDELETE FEATURE. Once the jobs are deleted, they are gone from the system permanently.

Delete All Jobs

The “Delete All Jobs” selection will delete all protected and unprotected jobs.

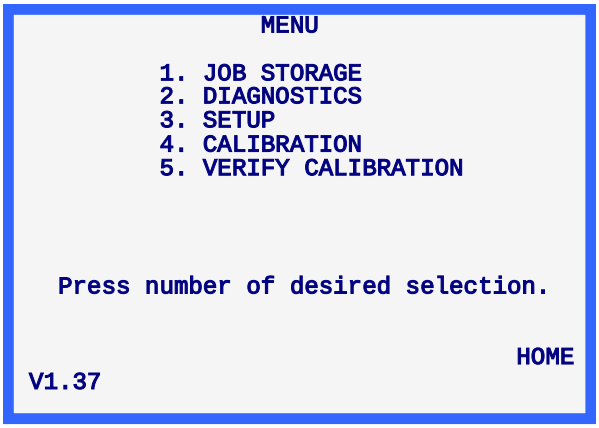
This menu selection may be password protected. If you are prompted for a password, enter the password, and you will then see a screen indicating how many jobs will be deleted. You will be required to verify this action to proceed.

Caution

There is NO UNDELETE FEATURE. Once the jobs are deleted, they are gone from the system permanently.

Chapter 8 Diagnostics

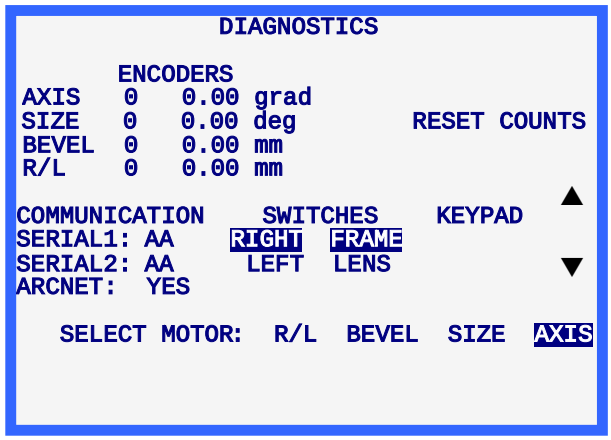
In order to access the *Diagnostics Menu* make sure the Home Screen (*TRACE FRAME Screen*) is displayed, then press the Menu soft key and the *Menu Screen* will be displayed. Select Menu Selection “2. DIAGNOSTICS” by pressing the [2] key.



Diagnostics Screen

There are no menu selection items associated with the Diagnostics menu, as there are with the other menu selections made from the *Menu Screen*. All required diagnostics are contained on one screen. This screen should provide the capability to test all functions of the tracer.

In order to exit *the Diagnostics Screen* press the EXIT key, which will return the program to the *Menu Screen*. **Note:** A password will be required if the Protection Level (on the *Password Screen*) is set to MAX.



Encoders

Encoders are electromagnetic devices inside the tracer that provide a numerical read-out of the positions of the movable axes of the trace mechanism.

The encoder reading for each axis will be displayed under the ENCODERS heading. The first encoder value is the un-scaled encoder reading and the second value is the scaled value, with units of measurement indicated after the scaled value.

Each axis can be physically moved by hand or moved using the motor controls (see Motors below). As the axis is moved the encoder readings will continuously be updated on the display.

Note

Upon entry into the *Diagnostic Screen*, the encoders will be zeroed at the present position of the axes. Unless the axes have been physically moved, this position will be the right eye tracing home position for the axes. Press the RESET COUNTS soft key to reset all encoders to zero.

Communication

Serial1 and Serial2

A continuously changing series of letters (A through Z) will be sent out each of the serial ports.

The serial ports can be tested by placing a jumper across pins 2 and 3 of each of the serial ports (the 9pin D connectors along the right side of the rear panel of the tracer). If the serial port is working properly, the display will change from a single character to the same character being displayed twice. For example, without the jumper the display after SERIAL1 or SERIAL2 would be {A,B,C…}; after the jumper is installed and if the serial port is working properly the display will be {AA,BB,CC,…}.

Note

Any communication cables connected to these serial ports must be disconnected in order to perform the serial port tests.

Switches

The Right/Left and Frame/Lens switch position will be displayed under the SWITCHES heading. The present switch position will be highlighted. For example in the above screen diagram the Right/Left switch is in the “Right” position and the Frame/Lens switch is in the “Frame” position.

The Right/Left switch is actually two separate switches, so the tracing mechanism could be positioned such that neither switch is activated and thus neither “Right” or “Left” are highlighted.

The Frame/Lens switch is a single switch, ON being one condition and OFF being the other, therefore either “Frame” or “Lens” should always be highlighted.

Keypad

The last key pressed will be indicated under the KEYPAD heading. The only key that will not be displayed is the EXIT key, as this key will exit the *Diagnostics Screen*.

Motors

Use the ARROW soft keys to jog the selected motor either forward or backward. The selected motor is highlighted in the SELECT MOTOR selection list. Pressing the soft key next to the SELECT MOTOR selection list can change the selected motor.

As the selected motor is jogged using the ARROW soft keys the ENCODER fields for the selected motor will be updated, to indicate the motor position.

Appendix A

Error Messages

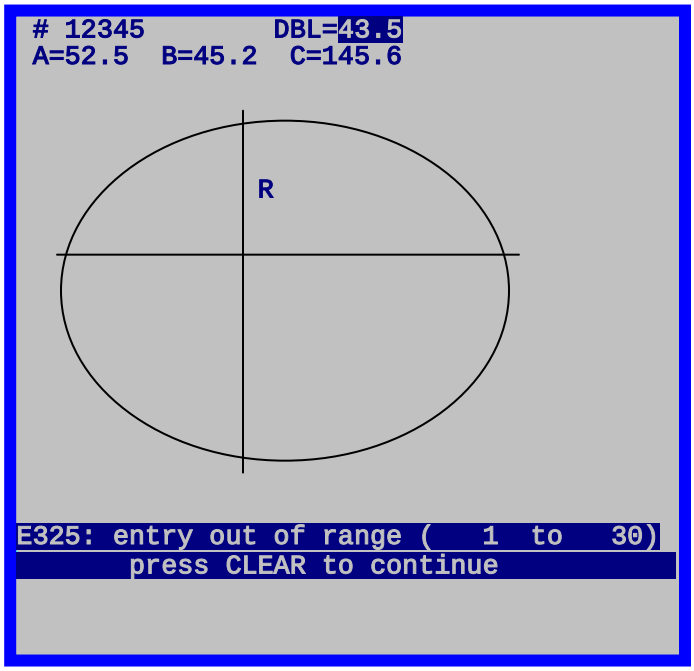
This appendix lists all error messages that may be encountered during operation of the tracer.

Error Overview

If an error is detected during operation of the tracer, a highlighted error message will be displayed along the two lower lines of the display. The CLEAR key is used to exit the error condition and is the only key accepted in response to an error. Upon pressing the CLEAR key the error message will be cleared from the display and the display will return to the state prior to the error occurring.

There are two types of messages discussed in this appendix: E###, which denotes an error, and W###, which denotes a warning to the user of something that may require attention.

The following is an example of an error; a DBL value has been entered that is out of range.



Error Messages

E100: Undefined error occurred

The tracer has reached some unexpected state or performed an illegal action from unknown causes. Cycle power off and then on again.

W105: Verify stylus is retracted

The user has pressed the STOP soft key interrupting a trace in progress. Manually home the stylus arm if required, then press CLEAR.

W110: Using default setup values

During power-up, the tracer was unable to read setup data (calibration values and configuration parameters) from the data EPROMs. This message is expected when first turning on a unit that has just been upgraded from some version prior to 1.04. If this is not the case, check that the data EPROM chips are properly installed at locations U4 and U7.

W115: Axis was not auto calibrated

For frames, patterns and rimless lenses, the tracer can be set so that when the size is calibrated, the axis is also calibrated automatically. In the MANUAL setting, only the size is calibrated. This message appears after a manual calibration to remind the user that the axis was not re-calibrated. This message does not indicate an “error” unless the user intended to calibrate both size and axis and the use of MANUAL mode was unintended.

W120: Changes have not been saved

This message appears if there have been changes to setup data and the user is about to leave the setup menu without saving these changes. Press the SAVE soft key if it is desired that the changes be saved. Otherwise, press the EXIT key to leave the setup menu without saving the changes.

E200: Job storage is full

The user is attempting to store job data when the maximum 120 jobs are already stored. One or more stored jobs must be deleted, or the tracer should be set up to automatically delete the oldest job whenever there is an attempt to store a new job into a full job store space.

E205: Job# not found

The user has requested display of a job which is not in the tracer job store. The job may never have been traced or it may have been deleted. If the tracer is configured to send jobs to a host, these jobs will not also be stored in the tracer. After they are sent to the host, they can no longer be viewed on the tracer.

E210: No jobs in storage

The user has attempted to display, edit or delete job data when no jobs are in the tracer job store. Repeated inability to store jobs may indicate that the data storage EPROM chips (positions U4 and U7) are not properly installed. If the tracer is configured to send jobs to a host, these jobs will not also be stored in the tracer. After they are sent to the host, they can no longer be viewed on the tracer.

E215: Radial change limit exceeded

The trace data is “too irregular” or does not form a continuous curve. This may be caused if the stylus loses contact with the object, or if the object or machine is jarred during the trace, or there is some interference with the stylus arm.

E300: An invalid entry has been made

An attempt has been made to enter 0 (zero) as the job#. The job# must be 1 or greater.

E305: An entry must be made

The user has not entered a required value, or has cleared the value in a field and then pressed ENTER before entering a new value.

E310: Job# already exists

The user has requested the creation or saving of a job with a number that is already in the tracer job store.

E315: Can not delete, Job protected

The user is attempting to delete a protected job. The job must first be re-saved as unprotected before it can be deleted.

E320: Password is not correct

The user has entered the incorrect password when accessing a password-protected function. Press CLEAR and carefully re-enter the password. Check with Lab Management whether the password has been changed. If the password has been forgotten, contact Technical Support.

E325: Out of range (xxxxx to xxxxx)

The user has entered a numeric value which is either too large or too small. The allowed range is shown in parentheses.

E330: No frame detected

At the start of a frame trace, the stylus has moved too far without detecting a frame. Verify that a frame is properly mounted. The frame BEVEL may require calibration. If this message occurs when tracing a pattern or lens, the sensor detecting when the pattern holder is mounted may require adjustment. Use the SCREEN key to temporarily override this sensor.

E335: No pattern/lens detected

At the start of a pattern/lens trace, the stylus arm has moved too far inward without detecting a pattern or lens. Verify that a pattern or lens is properly mounted. The minimum pattern/lens diameter is about the same as the diameter of the mounting post on the pattern holder.

E340: Wrong pattern or bad orientation

The calibration pattern required for pattern/lens axis calibration is not mounted or was mounted backwards. The calibration pattern has a semi-circle on one side and two flat edges meeting in a point on the other side. It must be mounted so that the point faces

towards the right side of the tracer. This message occurs when the tracer does not detect the two flat edges and the point at the expected locations.

E345: Wrong calibration template

The standard frame calibration plate has one round hole on the right side and a larger hole with a flat section on the left side. The flat section is at the bottom of the hole. At one time, a plate was used in which the flat section was not at the bottom of the left hole. This message is displayed if the tracer detects that one of these obsolete plates has been mounted.

E425: OMA host requiring initialization

This message occurs when a host requires a level of initialization not supported by the tracer. This is a problem in the host; the tracer supports all initialization modes which the standard requires for a device of its type.

E430: OMA receive timeout

During an OMA communications session, the tracer has not received a response within the allotted time. The other device may be unavailable or (in the case of a computer) overloaded. There may be a cable system problem, or mis-matched communication parameters between the tracer and the other device.

E431: OMA timeout awaiting confirmation

At the initiation of an OMA communication session, the tracer has not received a response within the allotted time. The other device may be unavailable or (in the case of a computer) overloaded. There may be a cable system problem, or mis-matched communication parameters between the tracer and the other device.

E435: OMA NAK confirmation

An OMA device has received a message from the tracer which it did not “understand” or to which it is unable to respond. The problem may be temporary, i.e., the device may be temporarily too busy to respond. The tracer may be requesting a level of service which the other device cannot supply. The OMA configuration of the other device should be checked. Because the OMA “standard” is not yet in its final form**,** it is possible that the OMA support in the tracer and in the other device conform to different versions of the “standard.”

E440: An unknown OMA error occurred

The tracer has lost synchronization and cannot re-establish the OMA communication. Specifically, the tracer is unable to interpret data received from another device and unable to reset both itself and the other device to a known state. The most likely causes for this problem are electrical “noise” in the cable system, poor grounding, defective cable, or mis-matched communications setup parameters.

E445: Timeout awaiting OMA buffer

This message occurs when the tracer serial communications connections are changed (for example, from HOST to EDGER) and an attempt is made to use the new connection before the corresponding change has been made at the attached device. It can also occur when a different type of device is plugged into the tracer's serial port and attempts communication before the tracer's setup is changed.

Verify that the tracer connection setup matches the attached device(s). Turn the tracer 's power off briefly and then on again.

E515: Problem reading Setup data

Internal memory error: Contact Technical Support.

E520: Problem saving Setup data

Internal memory error: Contact Technical Support.

E525: Problem reading Job data

Internal memory error: Contact Technical Support.

E530: Problem saving Job data

Internal memory error: Contact Technical Support.

E535: Problem reading Job Index Table

Internal memory error: Contact Technical Support.

E540: Problem saving Job Index Table

This message occurs when the tracer detects an error while attempting to read from or write to its data EPROM memory. Cycle power off and then on. If the problem persists, there is no user remedy other than changing EPROM's.

E545: Problem deleting Job data

When deleting a job from its data EPROMs, the tracer overwrites the job data with zeros. This message occurs when the tracer detects that the data has not been overwritten. Check that the data EPROMs are properly installed at positions U4 and U7.

E600: System Error. Call Technical Support.

The tracer has failed its diagnostic self-test during power-on initialization because its program has become corrupted. The program EPROMS in positions U2 and U5 need to be replaced.

E605: Problem moving between eyes

Internal sensors indicate that the carriage has not moved to the desired full-left or full-right position. Check any obstructions to carriage movement. Use the Diagnostic Screen to verify carriage motor, encoder, and sensor operation. Possible sensor problems: (1) Incorrect sensor alignment with magnet (2) Magnet missing (3) Incorrect magnet polarity (red dot out) (4) Broken sensor on board.

E610: Stylus dropout detected

The stylus has lost contact with the trace object. Verify that trace object does not have any irregularities that are "kicking" the stylus away (such as an open eyewire in a frame or raised lettering on the face of a pattern.) Try a different frame setting. Adjust R and Z bias forces. Reduce trace speed.

E615: Insufficient data collected

The AXIS has stopped rotating before the required 400 trace data points have been collected. This may be caused by a physical obstruction, misadjustment, which causes the axis to bind, motor failure, encoder failure, or a wiring problem.

E620: Stylus not positioned properly

In calibrating the BEVEL position, the stylus has not been properly pulled out and placed in the calibration position. The user must manually place the stylus for this calibration.

E625: Rotation fault – trace aborted

At the start of each trace, the stylus rotates to a near vertical position. This message indicates that this rotation has not taken place as expected. Axis movement may be obstructed or require adjustment.

W630: Data bump at start of trace

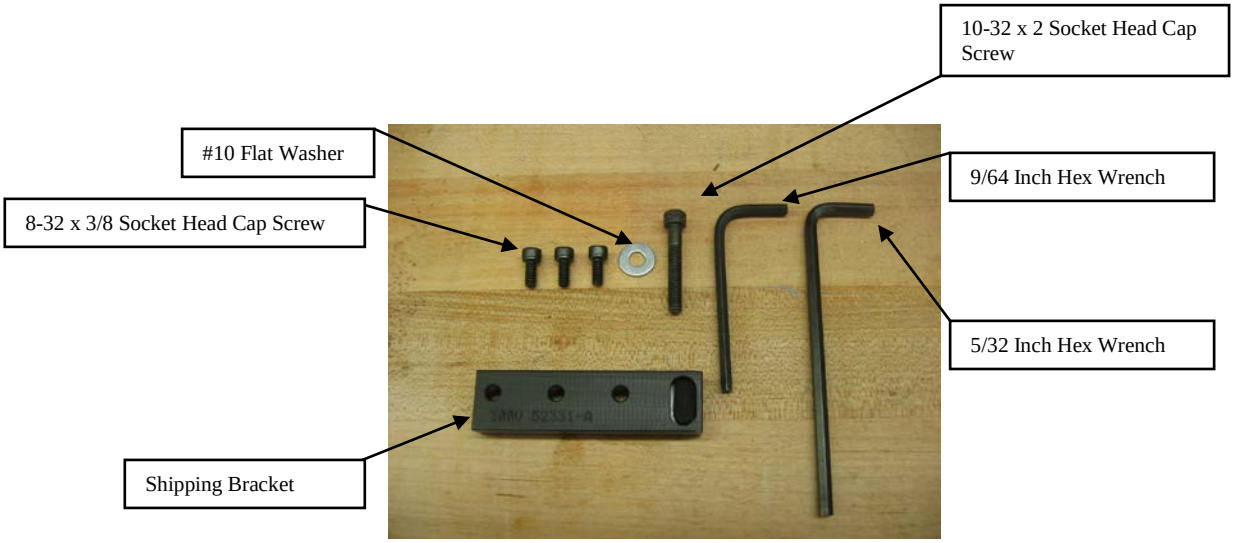
The tracer collects several extra points at the end of a trace which overlap the first several points. This message is issued if the radius in this overlap region do not match the corresponding values from the start of the trace. The usual cause is that the stylus is not fully seated in the frame bevel at the start of the trace. Prior to issuing this message, the tracer attempts to re-trace the object. Re-calibrate the bevel.

Appendix B

Preparing the Tracer for Shipping

NEVER ship a tracer without reinstalling the shipping bracket and securing the carriage. The tracer can be damaged if the shipping bracket and hardware are not installed correctly prior to shipping.

The following is a picture of the shipping bracket, hardware, and hex wrenches you will need to prepare the tracer for shipment.



Reinstalling the Shipping Bracket

1. Locate the shipping bracket, hardware, and hex wrenches. (After removing the shipping bracket and hardware initially, the recommended location for storing these items is the tracer's accessory kit.)
2. As shown in the picture below, spread the frame holders and position the shipping bracket over the stylus. Install the three 8-32 x 3/8 socket head cap screws using the 9/64 inch hex wrench.

3. Slide the carriage to the left and install the 10-32 x 2 socket head cap screw with a #10 flat washer using the 5/32 inch hex wrench.

4. The tracer is now ready for shipping.

Note

Also please note that the tracer should be packed in a foam shipping box molded to fit the tracer.